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ABSTRACT

Part of a health occupations program, these instructional units consist of materials for use by those who are studying to become practical nurses. Covered in the units are the following: the nursing care of mothers and newborns (obstetrics, prenatal care and complications, patient needs, care of the newborn, prematurity, medications, and cultural aspects); pharmacology (dosages and solutions, administering medications, medications used to treat disorders of various systems of the body, infectious diseases, and allergic disorders); and integration (team medications, total patient care, the assistant team leader, and the role of the practical nurse). The units are comprised of a series of learning modules, each of which contains a rationale, performance objectives, learning activities and answers, terminology, and posttest. (MN)

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ED221750

HEALTH OCCUPATIONS CURRICULUM

SKILLS AND THEORY FOR PRACTICAL NURSE

UNITS 18, 19 AND 20

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CE 033 943

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Unit 18 stresses the prevention, promotion and maintenance of health during the prenatal, antipartal and the neonatal period, including the complications that are related to obstetrical nursing. Performance will be evaluated in both the lab and in the clinical area. Remember that most hospitals have different routines and procedures. Some of the assessment and procedure information will vary depending on your facility. In addition to basic preparation for maternal child care, this unit presents related cultural aspects that will be an important part of your clinical assessment.

NURSING CARE OF MOTHERS AND NEWBORNS

Module A1 - Introduction to Obstetrics
Module A2 - Prenatal Care and Complications
Module B - Meeting Patient's Needs in Labor and Delivery
Module C - Meeting Patient's Needs During the Puerperium
Module D - Evaluating Fetal Condition
Module E1 - General Characteristics, Appearance and Nursing Care of the Newborn
Module E2 - Problems of the Newborn
Module E3 - Prematurity
Module F - Medications
Module G - Cultural Aspects in the Nursing Care of Mothers and Newborns
Terminology
Post Tests:

1. Modules A1 and A2
2. Module B
3. Module C and D
4. Module E1, E2 and E3
5. Module F
6. Module G (class discussion only)

When you have completed the learning activities and are ready for a test or wish to challenge a test, please see your instructor.

Suggested Resources

The following texts and audiovisual aides will supplement the learning materials for this unit. If you are unable to locate these materials, your instructor will assist you. An additional source of information is in Module G on the cultural aspects of care.

1. Bethea, Doris C., RN., B.S., M.S. Introductory Maternity Nursing. J.B. Lippincott Company, Philadelphia, PA, 1979.
2. Clausen, Joy Princton, Margaret Hemp Flook, Bonnie Ford, Marilyn M. Green, Elda S. Popiel. Maternity Nursing Today. McGraw Hill Book Company, New York, NY, 1977.
3. Falconer-Patterson, Gustafson. Current Drug Book. W. B. Saunders Co., Philadelphia, PA, 1980-81.
4. Garney, Mathew, A.D.T. Govan, C. Hodge. Obstetrics Illustrated. Churchill Livingstone, New York, 1974.
5. Kalafatich, Andrew J., Dorothy R. Meeks and Barbara Jones. Maternal and Child Health. Littlefield, Adams and Co., 1977.
6. Lamberson, Eleanor C. Child Health: Basics for Primary Care. Appleton, Century, Crofts, New York, 1980.
7. Skelley, Esther G., R.M., M.A. Medications and Mathematics for the Nurse. Delmar Publishers, Albany, New York, 1976.
8. Physicians' Desk Reference For Nonprescription Drugs. Medical Economics, NJ, 1980.

Audiovisuals

1. Introduction to Infant Care, Trainex Corporation, Garden Grove, CA.

   Health Care of the Normal Infant

   Skin Care and Bathing Preparation

   Infant Care and Breast Feeding

   Bottle Feeding

   Bathing the Infant

   Emergency Childbirth, Part I

   Emergency Childbirth, Part II

   Post-Partum Care

2. Human Birth, Multiple Birth, Twins, by J.B. Lippincott Company, 1974. (16 mm film)

   Human Birth, Vertex Delivery Spontaneous

NURSING CARE OF MOTHERS AND NEWBORNS

Module A1 - Introduction to Obstetrics

RATIONALE

To give safe and effective care to the patient during pregnancy, you will need a fundamental knowledge of pregnancy, maternity care and related information.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify current problems in maternity care as discussed in this module.
2. Recognize the purpose of maternity care.
3. Identify three areas in which a birth certificate provides legal proof.
4. Identify the primary parts of the female and the male reproductive systems and explain their functions.
5. Identify terms specific to pregnancy.
6. Recognize the signs and symptoms of pregnancy.
7. Recognize the physical and emotional changes that occur during pregnancy.
8. Recognize the stages of development of the fetus.
9. Recognize normal fetal circulation, the vessels in the umbilical cord and the changes that take place in fetal circulation at birth.
10. Identify the average number of days in a pregnancy.
11. Identify the method for estimating the date of conception.
12. Identify the hormones that affect reproduction and recognize their physiological effect.

CLINICAL OBJECTIVES

To your instructor's satisfaction, when given a clinical assignment, you will:

1. Identify ten signs and symtoms of pregnancy observed in a patient. Describe and report your observations to your instructor and construct nursing notes specific to the patient.

LEARNING ACTIVITIES

Directions: All the information you need to complete this module is included in the textbook, Introductory Maternity Nursing, by Doris C. Bethea, J.B. Lippincott Company, Philadelphia, PA, 1979 and this module. The exercises in the module are included to help you learn the information presented in the textbook. After you have completed an exercise, go back and check your answers with the material in the chapter. If you have any questions, go to your instructor.

ACTIVITY #1. Maternity Care Today

Directions: Read Chapter 1, pages 1-11, in your textbook. After you have read this chapter, define the terms 1-2, then complete the remaining exercises. You may use your book to do the exercises and check your work.

1. Obstetrics: ______________________________

____

2. Nurse-Midwife: ______________________________

____

3. List and describe five current problems in maternity care.

a. ______________________________

____

b. ______________________________

____

c. ______________________________

____

d. ______________________________

____

e. ______________________________

____

4. The birth certificate provides legal proof in what three areas.

a. ______________________________

b ______________________________

c. ______________________________

LEARNING ACTIVITIES - continued

ACTIVITY #2. The Reproductive System

Directions: Read pages 12-32, Chapter 2, in your textbook. After you have read the chapter, define the terms 1-53.

The Female Reproductive System

1. Mons pubis: ____________________
2. Labia majora: ____________________
3. Labia minora: ____________________
4. Clitoris: ____________________
5. Vestibule: ____________________
6. Hymen: ____________________
7. Bartholin's glands: ____________________
8. Skene's glands: ____________________
9. Pudendum or vulva: ____________________
10. Perineum: ____________________
11. Breasts: ____________________
12. Acini or alveoli: ____________________
13. Areola: ____________________
14. Tubercles of Montgomery: ____________________
15. Rugae: ____________________
16. Vagina: ____________________
17. Uterus: ____________________
18. Cervix: ____________________
19. Fundus: ____________________
20. Internal Os: ____________________
21. External Os: ____________________

LEARNING ACTIVITIES - continued

22. Fallopian tubes: ______
23. Fimbriae: ______
24. Cilia: ______
25. Ovary: ______
26. Graafian follicle: ______
27. Ovulation: ______
28. Estrogen: ______
29. Progesterone: ______
30. Pelvis: ______
31. Corpus luteum: ______
32. Symphysis pubis: ______
33. False pelvis: ______
34. True pelvis: ______
35. Hemorrhoids: ______
36. Pelvimetry: ______

The Male Reproductive System

37. Penis: ______
38. Glans penis: ______
39. Prepuce: ______
40. Circumcision: ______
41. Scrotum: ______
42. Seminiferous tubules: ______
43. Testes: ______
44. Epididymis: ______
45. Vas deferens: ______

LEARNING ACTIVITIES - continued

46. Ejaculatory duct: ______________________________

47. Prostate gland: ______________________________

48. Seminal vesicles: ______________________________

49. Bulbourethral glands: ______________________________

Human Sexuality

50. Menstruation: ______________________________

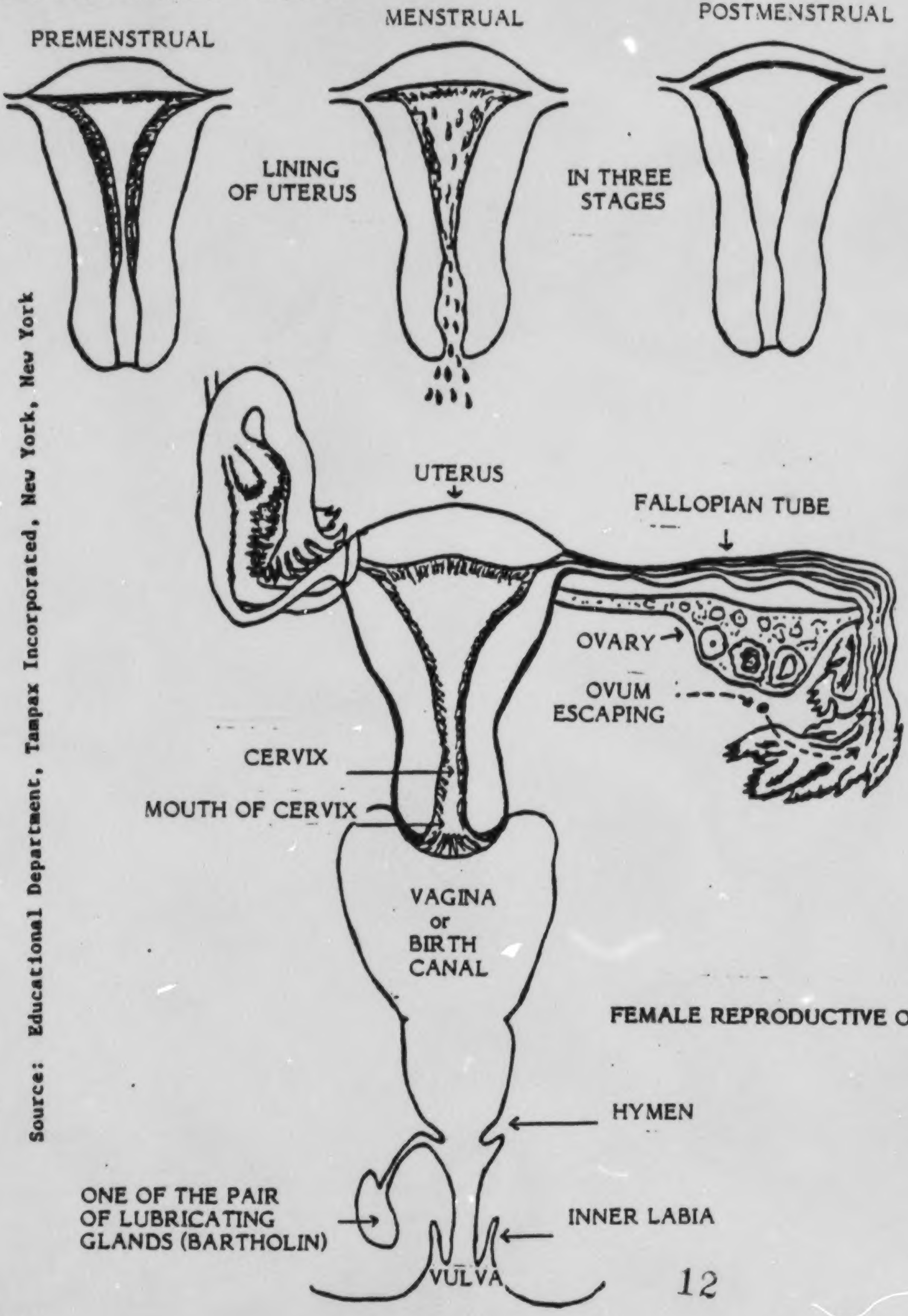
51. Menarche: ______________________________

52. Menopause: ______________________________

53. Infertility: ______________________________

Now, look at the diagrams of the female reproductive and the pelvic organs on the next two pages, and the diagram of the hormonal levels of the normal menstrual cycle on page 8. See if you can find some of the terms you have just defined.

LEARNING ACTIVITIES - continued

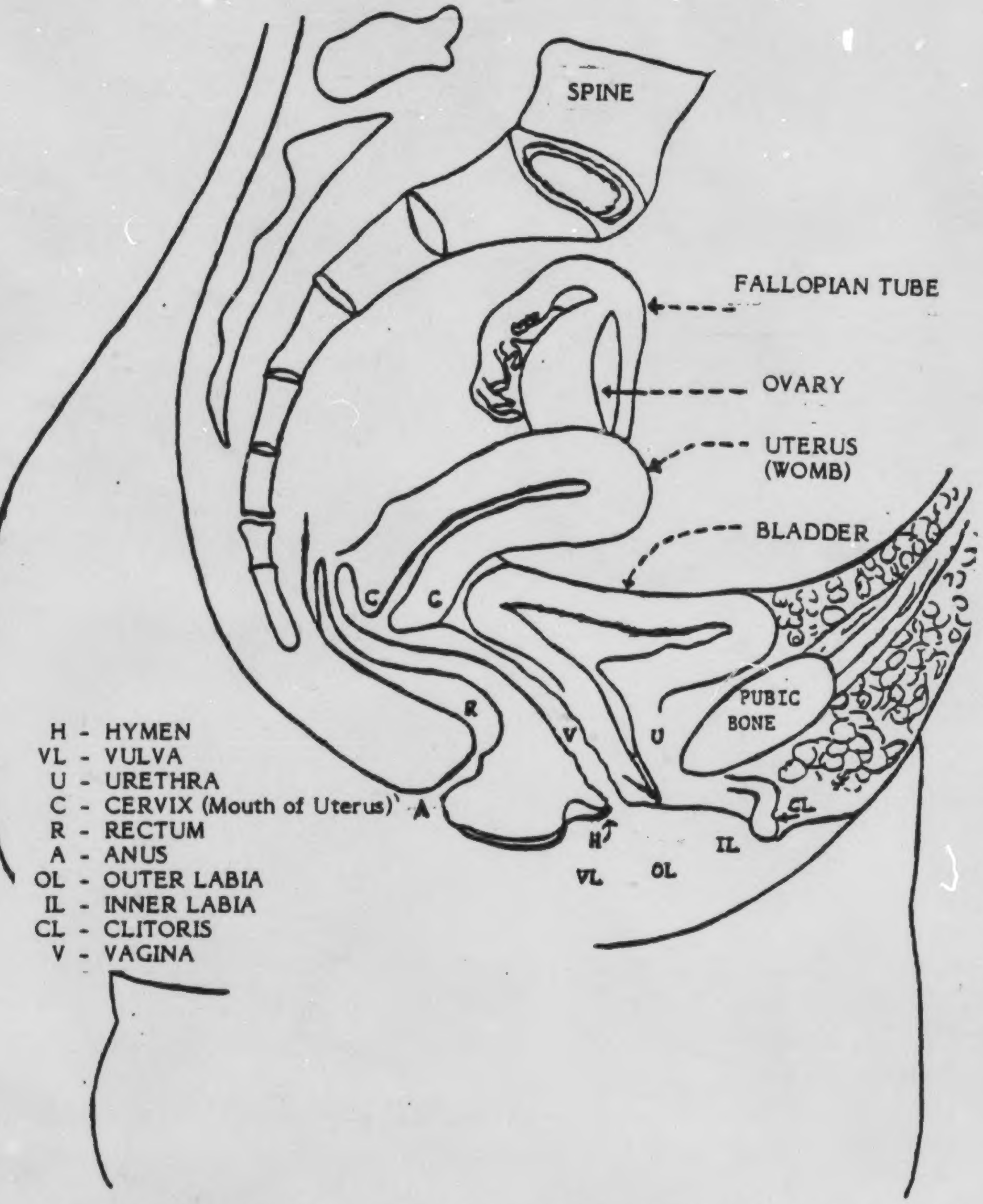

PREMENSTRUAL
MENSTRUAL
POSTMENSTRUAL
LINING OF UTERUS
IN THREE STAGES
UTERUS
FALLOPIAN TUBE
OVARY
OVUM ESCAPING
CERVIX
MOUTH OF CERVIX
VAGINA or BIRTH CANAL
HYMEN
ONE OF THE PAIR OF LUBRICATING GLANDS (BARTHOLIN)
INNER LABIA
VULVA

FEMALE REPRODUCTIVE ORGANS

Source: Educational Department, Tampax Incorporated, New York, New York

LEARNING ACTIVITIES - continued

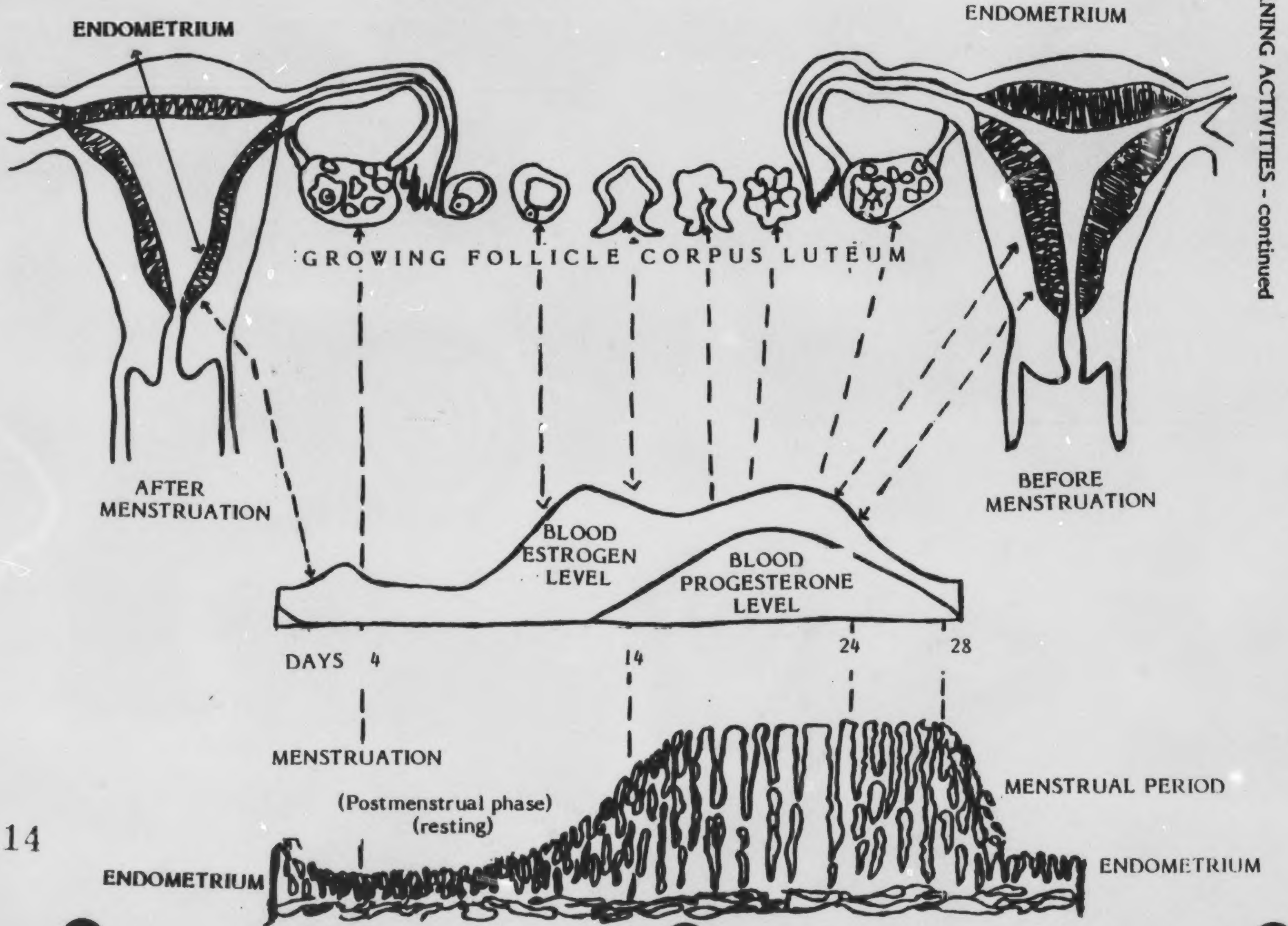
FEMALE PELVIC ORGANS
(standing)


SPINE
FALLOPIAN TUBE
OVARY
UTERUS
(WOMB)
BLADDER
C
C
PUBIC
BONE
R
V
U
A
CL
H
IL
VL
OL

H - HYMEN
VL - VULVA
U - URETHRA
C - CERVIX (Mouth of Uterus)
R - RECTUM
A - ANUS
OL - OUTER LABIA
IL - INNER LABIA
CL - CLITORIS
V - VAGINA

Source: Educational Department, Tampax Incorporated, New York, New York

NORMAL MENSTRUAL CYCLE


ENDOMETRIUM
ENDOMETRIUM
GROWING FOLLICLE CORPUS LUTEUM
AFTER MENSTRUATION
BEFORE MENSTRUATION
BLOOD ESTROGEN LEVEL
BLOOD PROGESTERONE LEVEL
DAYS 4
14
24
28
MENSTRUATION
(Postmenstrual phase) (resting)
MENSTRUAL PERIOD
ENDOMETRIUM
ENDOMETRIUM

LEARNING ACTIVITIES - continued

Directions: Complete the following. The answers can be found by reviewing the material in your textbook.

1. Name the three layers of the uterus.

   a. ________________________________

   b. ________________________________

   c. ________________________________

2. Discuss the function of the following hormones that control the normal menstrual cycle.

   a. FSH: ____________________________

   b. LH: ____________________________

   c. Estrogen: ________________________

   d. Progesterone: ______________________

3. Describe the role of the corpus luteum.

   ____

   ____

   ____

4. Name and describe the three parts of the true pelvis and explain why its size is important in child birth. (You may refer to the diagram on page 11 of the normal female pelvis.)

   a. ________________________________

   ____

   b. ________________________________

   ____

   c. ________________________________

   ____

LEARNING ACTIVITIES - continued

5. List three causes of male infertility.

   a. ______________________________

   b. ______________________________

   c. ______________________________

6. List three causes of female infertility.

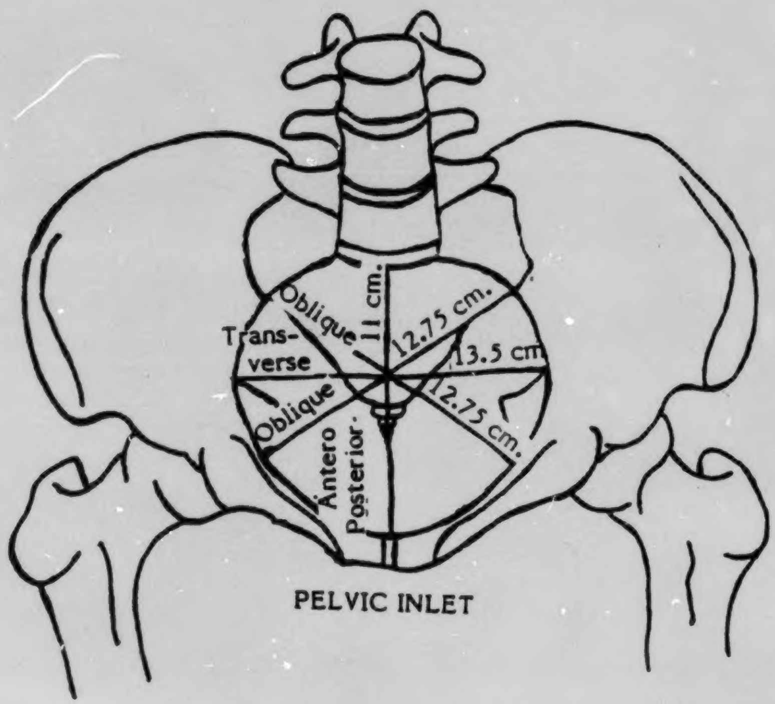
   a. ______________________________

   b. ______________________________

   c. ______________________________

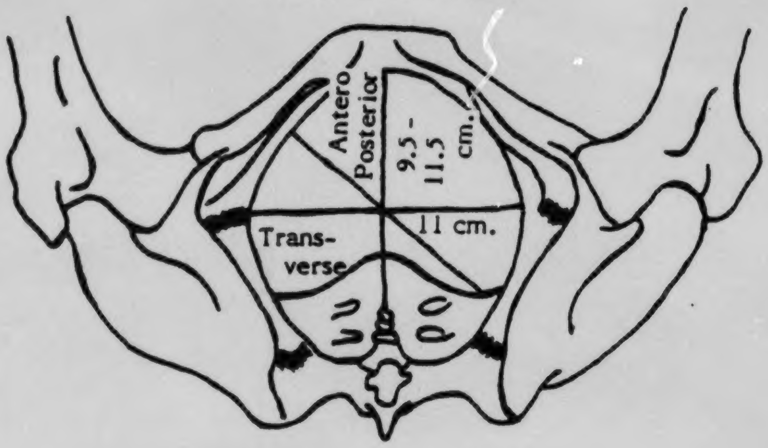
LEARNING ACTIVITIES - continued

OBSTETRICAL PRESENTATION AND POSITION


Oblique
11 cm.
12.75 cm.
Trans-
verse
13.5 cm
Oblique
12.75 cm.
Antero
Posterior

PELVIC INLET

PELVIC OUTLET


Antero
Posterior
9.5 -
11.5
cm.
11 cm.
Trans-
verse

THE NORMAL FEMALE PELVIS

Source: SIMILAC, Infant Formula Products, Ross Laboratories, Columbus, Ohio

ACTIVITY #3. Signs and Symptoms of Pregnancy

Directions: Read the following information and then study the diagram on page 14 of the progressive growth of the fundus.

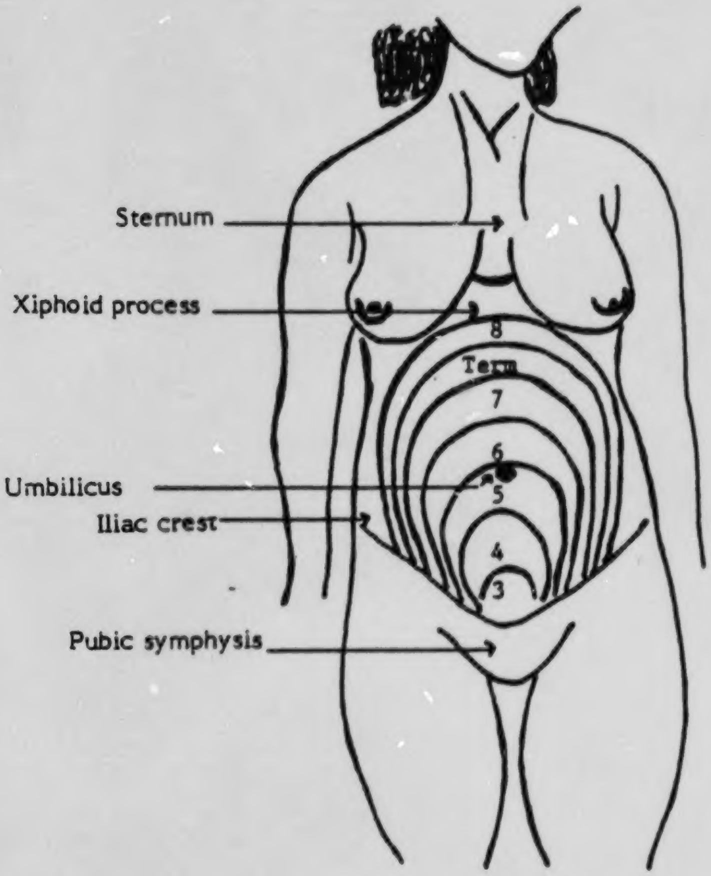
TRIMESTER	PRESUMPTIVE (SUBJECTIVE)	PROBABLE	POSITIVE
First 1-3 months	1. Amenorrhea 2. Breast changes (tender, fuller breasts) 3. Nausea, with or without vomiting - "morning sickness" (psychological and physiological) 4. Discoloration of the vaginal mucosa and vagina 5. Frequency of micturition 6. Abdominal distention 7. Pica (craving) 8. Fatigue	1. Enlargement of abdomen 2. Change in the uterus - size, shape, and consistency of the uterus (Hegar's sign) 3. Changes in female reproductive system 4. Goodell's sign 5. Chadwick's sign PREGNANCY TESTS: 1. Ascheim-Zondek test 2. Friedman's test 3. Hogben (South African toad) 4. American male frog test 5. Immunologic pregnancy test	
Second 4-6 months	1. Colostrum expressed 2. Quickening 3. Pigmentation of skin (Chloasma: linea nigra, and areola of breasts) 4. Heartburn 5. Flatulence 6. Weight gain 7. Feeling of well-being	1. Ballottement 2. Map outline of fetus	1. Hear fetal heart tones (FHT) 4-5 months 2. Feel fetus movement 4-5 months 3. See skeleton by x-rays 4-5 months 4. Placental souffle 5. Funic or fetal souffle

Signs and Symptoms of Pregnancy (continued)

TRIMESTER	PRESUMPTIVE (SUBJECTIVE)	PROBABLE	POSITIVE
Third 7-10 months	1. Frequency 2. Stria on abdomen and breasts 3. Constipation or diarrhea 4. Shortness of breath 5. Insomnia 6. Rolling, walking gait 7. Leg cramps 8. Varicosities	1. Braxton-Hicks contractions 2. Activity of baby 3. Leaking of colostrum	
Labor			1. Lightening 2. Show 3. Contractions, regular (usually occurring every 10 to 15 minutes) 4. Ruptured aminotic membrane

LEARNING ACTIVITIES - continued

Progressive Growth of the Fundus During Pregnancy (Measured in Calendar Months)


Sternum
Xiphoid process
8
Term
7
6
Umbilicus
5
Iliac crest
4
3
Pubic symphysis

NOTE: The fundus is lower at term than at 8 months gestation.

LEARNING ACTIVITIES - continued

ACTIVITY #4. Description of Pregnancy

Directions: Read Chapter 3, pages 33-42 in your textbook. After you have read the chapter, define the terms 1-28, then complete the remaining exercises. Use your book to check your answers. If you need help, ask your instructor to help you.

1. Conception: ____________________
2. Fertilization: ____________________
3. Parturition: ____________________
4. Pregnancy: ____________________
5. Gestation: ____________________
6. Gravida: ____________________
7. Primigravida: ____________________
8. Multigravida: ____________________
9. Para: ____________________
10. Primipara: ____________________
11. Multipara: ____________________
12. Nullipara: ____________________
13. Embryo: ____________________
14. Fetus: ____________________
15. Abortion: ____________________
16. Amenorrhea: ____________________
17. Linea nigra: ____________________
18. Quickening: ____________________
19. Chadwick's sign: ____________________
20. Goodell's sign: ____________________
21. Hegar's sign: ____________________

LEARNING ACTIVITIES - continued

22. Ballottement: ______________________________

23. Braxton-Hicks contractions: ______________________________

24. Ascheim-Zandek test: ______________________________

25. Friedman's test: ______________________________

26. Immunologic test (antigen-antibody reaction): ____________________

____

27. Frog test: ______________________________

28. Fetuscope: ______________________________

29. State the average duration of pregnancy. ____________________

State and describe Naegele's rule. ____________________

____

____

30. Give the gestation period in weeks for each of the following:

preterm ______________________________

term ______________________________

post-term ______________________________

31. List and describe five presumptive signs of pregnancy.

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

e. ______________________________

LEARNING ACTIVITIES - continued

32. List and describe five probable signs of pregnancy.

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

    e. ______________________________

33. List and describe three positive signs of pregnancy.

    a. ______________________________

    b. ______________________________

    c. ______________________________

34. In a group discussion if possible or in writing, review two psychological effects of pregnancy.

    ____

    ____

    ____

ACTIVITY #5. Changes in Fetal Circulation After Birth

Directions: Read and study the following chart.

STRUCTURE	BEFORE BIRTH	AFTER BIRTH
Umbilical vein	Brings arterial blood to liver and the heart.	Obliterated. Becomes the round ligament of the liver.
Umbilical arteries	Bring arteriovenous blood to the placenta.	Obliterated. Becomes vesical ligaments on anterior abdominal wall.
Ductus venosus	Shunts arterial blood into inferior vena cava.	Obliterated. Becomes ligamentum venosum.
Foramen ovale	Connects right and left auricles (atria).	Obliterated. Sometimes open.

LEARNING ACTIVITIES - continued

STRUCTURE	BEFORE BIRTH	AFTER BIRTH
Lungs	Contain no air and very little blood.	Filled with air and well supplied with blood.
Pulmonary arteries	Bring little blood to lungs.	Bring much blood to lungs.
Aorta	Receives blood from both ventricles.	Receives blood only from left ventricle.
Inferior vena cava	Brings venous blood from body and arterial blood.	Brings venous blood only to right auricle.
Ductus arteriosus	Shunts arterial blood from the pulmonary artery to aorta.	Obliterates and becomes the ligament arteriosus.

Source: Williams, J.F. Anatomy and Physiology, Ed. 7, Philadephia, Pennsylvania: W.B. Saunders Co.

ACTIVITY #6. Three Germ Layers

Directions: Read and study this information.

The inner cell mass begins to differentiate into three layers about the 16th day after the ova is fertilized by the sperm.

Layers	Portions of the Fetus Formed
Ectoderm	1. Skin 2. Appendages 3. Salivary and mammary glands 4. Nasal passages 5. Upper part of pharynx 6. Anus 7. Crystalline lens 8. External ear 9. Nervous system 10. Sense organs 11. Part of the fetal membranes

LEARNING ACTIVITIES - continued

Layers	Portions of the Fetus Formed
Mesoderm	1. Urinary organs 2. Reproductive organs 3. Muscles 4. Bones 5. Connective tissues 6. Circulatory system
Entoderm	1. Alimentary canal 2. Thymus 3. Thyroid 4. Lungs 5. Pancreas 6. Bladder 7. Various small glands and tubules

Source: Meeks, Dorothy R. and Kalafatich, Audry. Maternal and Child Health, by Paterson, New Jersey: Littlefield, Adams, and Company, 1960, page 18.

ACTIVITY #7. Fetal Development

Directions: Read the following description of fetal development in lunar months.

LUNAR MONTH	LENGTH	WEIGHT	CHARACTERISTICS
1st	0.2 in.	—	All organs present in rudimentary form.
2nd	1.2 in.	1/30 oz.	Because of the brain's rapid development, the head is very large in comparison to the other parts of the embryo.
3rd	2 1/2-3 1/3 in.	1/2 oz.	The centers of ossification appear in most bones and the teeth are forming under the gums.
4th	4-6 1/2 in.	3 1/2 oz.	Sex can be definitely differentiated. Downy hair (lanugo) appears on the head.

LEARNING ACTIVITIES - continued

LUNAR MONTH	LENGTH	WEIGHT	CHARACTERISTICS
5th	7-10 1/4 in.	10 oz.	Downy hair, called lanugo, is present on the skin and there is hair on the head. Quickening has occurred and the fetal heart tones can be heard.
6th	11-14 in.	1 lb. 4 oz.	Skin wrinkled. Eyebrows and eyelashes appear. Fetuses of this size, if born, have survived; however, the outlook must be regarded as practically hopeless. A white cheese material, called vernix caseosa, appears on the skin.
7th	15 in.	2 lbs.	Skin red and covered with vernix. If born, fetus breathes, cries, moves and has some chance of survival with expert care.
8th	16 1/2 in.	3 lbs. 9 oz.	Appearance of "little old man." If born may live with proper care. Chance of survival increases.
9th	18 in.	5 lbs. 4 oz.	The chance of survival is excellent. Fat deposits under the skin gives the fetus a more pleasing "plump" appearance.
10th	20 in.	7 lbs.	Full term. Skin smooth, without lanugo except on shoulders, covered with vernix, fingers and toes with well-developed nails projecting beyond their tips.

Source: Kalafatich, Audrey. Maternal and Child Health, New Jersey: Littlefield, Adams and Company, 1960, page 18.

Bethea, Doris C. Introductory Maternity Nursing, Philadelphia, PA: J.B. Lippincott Company, 1979, page 60.

LEARNING ACTIVITIES - continued

ACTIVITY #8. Normal Body Changes During Pregnancy

Directions: Read pages 43-51, Chapter 4, in your textbook. After you have read the chapter, define the terms 1-9, then complete the remaining exercises.

1. Effacement: ____________________
2. Dilation: ____________________
3. Lactation: ____________________
4. Striae gravidarum: ____________________
5. Colostrum: ____________________
6. Linea nigra: ____________________
7. Chloasma: ____________________
8. Diastasis recti: ____________________
9. Pica: ____________________
10. Briefly discuss the reason for backache during pregnancy.

    ____

    ____
11. Describe the reason for edema of the feet and the ankles during pregnancy.

    ____

    ____
12. Briefly state the reason for urinary infection during pregnancy.

    ____

    ____

ACTIVITY #6. Fetal Development

Directions: Read Chapter 5, pages 52-65, of your textbook. After you have read the chapter, define the terms 1-18, then complete the remaining exercises. You may use your book.

1. Chromosomes: ____________________
2. Gamete: ____________________
3. Zygote: ____________________

LEARNING ACTIVITIES - continued

4. Genes: ____________________

5. Amniocentesis: ____________________

6. Morula: ____________________

7. Trophoblast: ____________________

8. Blastocyte: ____________________

9. Decidua: ____________________

10. Chorion: ____________________

11. Villi: ____________________

12. Amniotic fluid: ____________________

13. Placenta: ____________________

14. Cotyledon: ____________________

15. Umbilical cord: ____________________

16. Wharton's jelly: ____________________

17. Lanugo: ____________________

18. Hypoxia: ____________________

19. Describe briefly how the sex of a child is determined. ____________________

____

____

20. What is the importance of the chorionic villi in the nourishment of the fetus?

____

____

____

LEARNING ACTIVITIES - continued

21. List the purposes of the amniotic fluid.

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

    e. ______________________________

22. List the three germ layers of the inner cell mass.

    a. ______________________________

    b. ______________________________

    c. ______________________________

23. List four purposes of the placenta.

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

24. Using FIGURE 5-5 page 62 of your textbook, label the diagram of the fetal circulation. (Diagram is on the following page.)

25. Discuss the role the following play in fetal circulation.

    a. Ductus venosus: ______________________________

    ____

    b. Foramen ovale: ______________________________

    ____

    c. Ductus arteriosus: ______________________________

    ____

26. Discuss the difference between identical and fraternal twins.

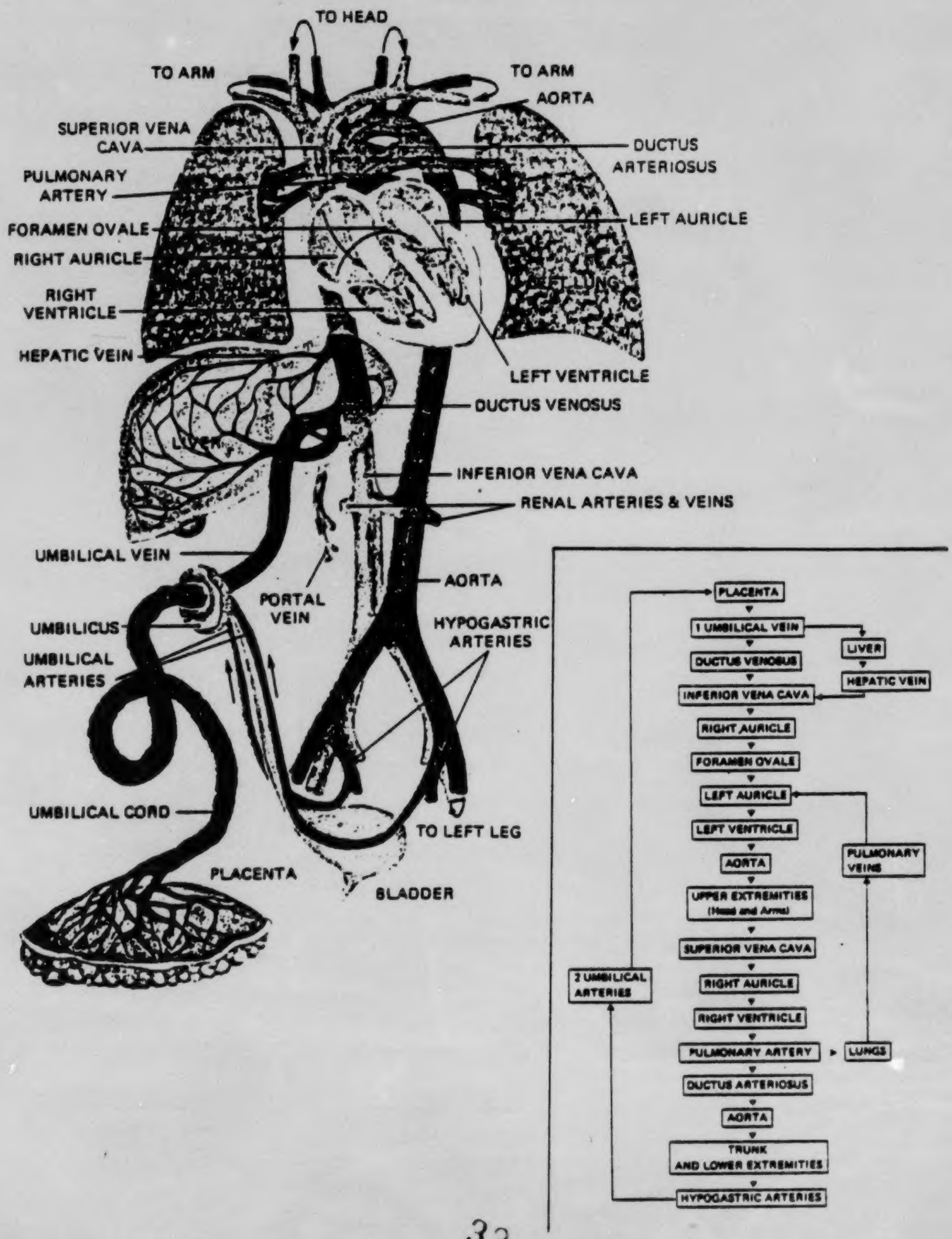
    ____

    ____

LEARNING ACTIVITIES - concluded

Directions: Label the diagram using page 62 of your textbook as a guide.

FETAL CIRCULATION


TO HEAD
TO ARM
TO ARM
AORTA
SUPERIOR VENA CAVA
DUCTUS ARTERIOSUS
PULMONARY ARTERY
LEFT AURICLE
FORAMEN OVALE
RIGHT AURICLE
LEFT LUNG
RIGHT VENTRICLE
HEPATIC VEIN
LEFT VENTRICLE
DUCTUS VENOSUS
LIVER
INFERIOR VENA CAVA
RENAL ARTERIES & VEINS
UMBILICAL VEIN
AORTA
PORTAL VEIN
UMBILICUS
HYPOGASTRIC ARTERIES
UMBILICAL ARTERIES
UMBILICAL CORD
TO LEFT LEG
PLACENTA
BLADDER
PLACENTA
1 UMBILICAL VEIN
LIVER
DUCTUS VENOSUS
HEPATIC VEIN
INFERIOR VENA CAVA
RIGHT AURICLE
FORAMEN OVALE
LEFT AURICLE
LEFT VENTRICLE
AORTA
PULMONARY VEINS
UPPER EXTREMITIES (Head and Arms)
SUPERIOR VENA CAVA
2 UMBILICAL ARTERIES
RIGHT AURICLE
RIGHT VENTRICLE
PULMONARY ARTERY
LUNGS
DUCTUS ARTERIOSUS
AORTA
TRUNK AND LOWER EXTREMITIES
HYPOGASTRIC ARTERIES

NURSING CARE OF MOTHERS AND NEWBORNS

Module A2 - Prenatal Care and Complications

RATIONALE

The purpose of prenatal (antepartal) care is to protect the well-being of the unborn child by promoting and protecting the health of the pregnant woman. As a practical nurse, you can assist in reducing the complications of pregnancy and the number of premature births by applying the knowledge and the skills covered in this module.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the two-fold purpose of antepartal care.
2. Explain the reasons for prenatal medical care.
3. Identify the seven danger signs that can occur during pregnancy.
4. Identify the components of a balanced daily diet.
5. Identify theories and methods of preparation for child birth.
6. Recognize the normal discomforts of pregnancy and identify the physiological causes.
7. Identify the most frequent causes of hemorrhage during the first and the latter parts of pregnancy, describe the characteristics of each and identify the nursing care needed for each.
8. Recognize given health problems occurring during pregnancy and their prevention, treatment and necessary nursing care.

LEARNING ACTIVITIES

Directions: In this section, Part 2 of Module A, Prenatal Care and Complications, you will read your textbook Introductory Maternity Nursing by Bethea and complete the exercises in the module. After you have answered an exercise, go back and check your work with the information in the chapter.

LEARNING ACTIVITIES - continued

ACTIVITY #1. Normal Discomforts of Pregnancy

Directions: Read and study this chart.

Discomfort and Related Physiology	Prevention and Care
A. Nausea and vomiting: "Morning sickness" 1. Symptoms may be caused by physiologic changes of gestation such as slowing down of peristalsis or changes in hormonal balance.	Prevention: 1. Rest 2. Relaxation 3. Happy frame of mind 4. Exercise 5. Fresh air Care: 1. Eat a piece of dry toast or cracker about half hour before getting up. 2. Omit greasy foods. 3. Eat 5 or 6 small meals a day. 4. Sedation or tranquilizer, as ordered.
B. Heartburn: 1. Crowding and decreased motility of the stomach.	Prevention: 1. Frequent small feedings. 2. Reduce amount of fat in diet. 3. Avoid fatigue. Care: 1. Anti-acid preparation; avoid sodium bicarbonate because of rebounding effect and sodium content.

LEARNING ACTIVITIES - continued

Discomfort and Related Physiology	Prevention and Care
C. Constipation: 1. Decreased peristalsis due to pressure of growing fetus.	Prevention: 1. Daily exercise. 2. Drink plenty of fluids and eat fresh fruits. 3. Eat a well-balanced diet. 4. Regular elimination time and eating time. Care: 1. Suppository, if prescribed by doctor.
D. Flatulence: 1. Relaxation of bowel.	Prevention: 1. Small feedings. 2. Chew food well. 3. Regularity in elimination. 4. Avoid gas-forming foods. Care: 1. Exercise 2. Rest
E. Shortness of breath: (Dyspnea) 1. Rise of enlarging uterus.	Prevention: 1. None Care: 1. Lie on back and extend arms upward.

LEARNING ACTIVITIES - continued

Discomfort and Related Physiology	Prevention and Care
F. Backache: 1. Postural changes due to pregnancy.	Prevention: 1. Good body alignment 2. Exercise 3. Abdominal support Care: 1. Rest
G. Varicose veins: 1. Hereditary tendencies aggravated by enlarging uterus creating pressure on abdominal veins that interfere with return of the blood from the lower limbs.	Prevention: 1. Avoid constrictions of any type. 2. Avoid standing or sitting for long periods. 3. Rest with feet and legs elevated. Care: 1. Use elastic stockings if necessary. 2. Elevate legs to relieve aching pain.
H. Hemorrhoids: 1. Due to pressure interfering with return venous circulation.	Prevention: 1. Prevent constipation. Care: 1. Gently push back into rectum. 2. Lie down with buttocks elevated. 3. Hot sitz bath. 4. Medication may be prescribed.

LEARNING ACTIVITIES - continued

Discomfort and Related Physiology	Prevention and Care
I. Swelling of feet: (Edema) 1. Seepage of fluid through the walls of the distended veins.	Prevention: 1. Restricted salt intake. 2. Rest with feet elevated. Care: 1. May be sign of toxemia; report to doctor.
J. Leg cramps: 1. Tension, circulatory impairments, overstretching of the muscles and the fascia of the legs and, in some instances, lack of calcium.	Prevention: 1. Sufficient calcium intake and B complex. 2. Rest to avoid fatigue. Care: 1. Apply heat. 2. Extend affected leg and flex ankle, pointing toes to knees.
K. Vaginal discharge: 1. Vaginal secretions increase with pregnancy.	Prevention: 1. None Care: 1. Cleanliness 2. If profuse and causes itching and burning, consult doctor.

LEARNING ACTIVITIES - continued

Discomfort and Related Physiology	Prevention and Care
L. Itching: 1. Dryness of skin.	Prevention: 1. Avoid irritating materials. 2. Avoid excessive use of soap. Care: 1. Bathe with solution of soda bicarbonate. 2. Increase fluid intake. 3. Oil the skin following a bath.

Source: Meeks, Dorothy and Kalafatich, Audry. Maternal Child Health, Paterson, New Jersey: Littlefield, Adams and Company, 1977.

Bethea, Doris C. Introductory Maternity Care, Philadelphia, PA: J.B. Lippincott Company, 1979.

Activity #2. Health Care During Pregnancy

Directions: Read Chapter 6, pages 66-99, of your textbook. After you have read the chapter, define the terms 1-9, then complete the remaining exercises. You may use your book.

1. Antepartal: ______________________________

____

2. Prenatal: ______________________________

____

3. Obstetrician: ______________________________

____

4. Albumin: ______________________________

____

LEARNING ACTIVITIES - continued

5. Illegitimacy: ______________________________

6. Heartburn: ______________________________

7. Hemorrhoids: ______________________________

8. Moniliasis: ______________________________

9. True conjugate: ______________________________

10. List and explain four goals of prenatal care according to Bethea.

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

LEARNING ACTIVITIES - continued

11. Summarize a process for evaluating the health status of a pregnant patient by stating the reason for the following procedures.

First Visit: Physical examination: ______________________

Pelvic examination: ______________________

Laboratory tests: ______________________

12. Name three potential health problems in pregnancy and state corrective measures that can be taken.

a. ______________________

b. ______________________

c. ______________________

13. Name three potential health problems in pregnancy and state potential preventive measures that can be taken.

a. ______________________

b. ______________________

c. ______________________

LEARNING ACTIVITIES - continued

14. What is the roll-over test? ______________________________

15. List five normal discomforts of pregnancy and state one method of relief for each discomfort.

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

    e. ______________________________

16. List the "seven danger signs" of expectant mothers.

    a. ______________________________
    b. ______________________________
    c. ______________________________
    d. ______________________________
    e. ______________________________
    f. ______________________________
    g. ______________________________

LEARNING ACTIVITIES - continued

17. Name the nutrients needed for a well-balanced diet during pregnancy.

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

e. ______________________________

18. Why do the following nutrients need to be increased during pregnancy?

a. Calcium: ______________________________

b. Phosphorous: ______________________________

c. Iron: ______________________________

d. Vitamin "A": ______________________________

e. Vitamin "C": ______________________________

f. Vitmain "D": ______________________________

g. Protein: ______________________________

19. List the eleven common discomforts of pregnancy.

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

e. ______________________________

f. ______________________________

g. ______________________________

h. ______________________________

j. ______________________________

k. ______________________________

l. ______________________________

LEARNING ACTIVITIES - continued

20. Discuss smoking and the use of alcohol during pregnancy.

21. List several methods of childbirth preparation and a brief explanation about each.

ACTIVITY #3. The Family and Pregnancy

Directions: Read pages 101-111, Chapter 7, of Bethea. After reading the chapter, complete the following by briefly discussing how pregnancy can affect the following people.

1. Mother:

2. Father:

LEARNING ACTIVITIES - continued

3. Children: ____

____

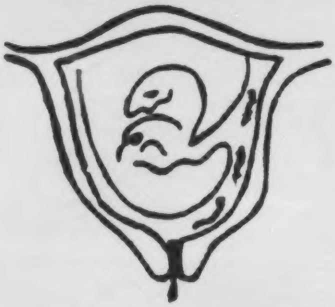
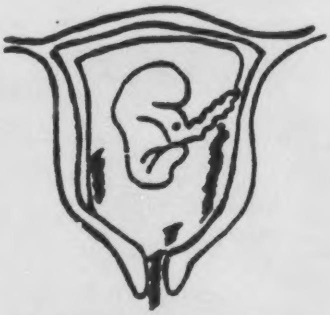
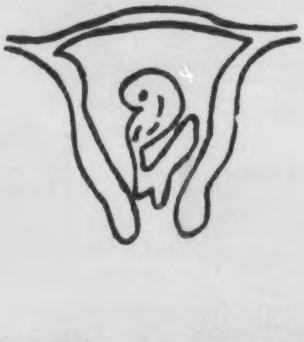
____

____

____

ACTIVITY #4. Classification of Abortions

Directions: Read and study the following information and diagrams of abortions. Spontaneous abortion is the termination of pregnancy without mechanical or medical interference.

Classification of Spontaneous Abortions		Characteristics
Threatened		1. Bleeding. 2. Sometimes backache and cramps. 3. Cervix is closed.
Inevitable		1. Bleeding is copious. 2. Cramping. 3. R.B.O.W. may or may not have occurred. 4. Dilation of cervix.
Incomplete		1. D & C may be necessary. 2. Part of products of conception expelled and part retained. 3. Hemorrhage.

LEARNING ACTIVITIES - continued

Classification of Spontaneous Abortions		Characteristics
Complete		1. All of the products of conception are expelled.
Missed		1. Fetus dies in the uterus. 2. Not expelled and retained indefinitely.
Habitual		1. Spontaneous abortion occurs in successive pregnancies, three or more.

The following information concerns induced abortions. Induced abortion is the deliberate, intentional termination of pregnancy before the age of viability.

Classification of Induced Abortion	Characteristics
Therapeutic abortion (Also known as elective interruption of pregnancy, EIP)	1. Termination of the pregnancy by medical means for medical reasons such as a D & C or a hysterectomy. 2. Some reasons for a therapeutic abortion are: rheumatic heart disease, hypertensive vascular disease, carcinoma of the cervix. There may also be psychological reasons for EIP.

LEARNING ACTIVITIES - continued

Classification of Induced Abortion	Characteristics
Criminal Abortion	1. Deliberate termination of pregnancy without medical or legal reasons.

ACTIVITY #5. Complications During Pregnancy

Directions: Read the following information. If you have any questions, ask your instructor to assist you.

Complications of Pregnancy Involving Bleeding

Complications	Cause	Symptoms	Prevention or Care
1. Abortion	1. Abnormalities in the size and shape of the uterus. 2. Defects in sperm or ovum. 3. Maternal disease (pyelitis or pneumonia). 4. Deficiency of hormones. 5. Cause unknown. 6. Drugs. 7. Surgical procedures.	1. Bleeding. 2. Expulsion of fetus and the placenta (completely or incompletely).	Severity of symptoms will determine treatment: 1. Bedrest 2. Avoid straining. 3. May prescribe hormone to control bleeding. 4. Medications for cramping, if present. 5. D & C, if explusion is incomplete.
2. Hydatidiform mole	1. Benign neoplasm of the chorion.	1. Normal pregnancy at first. 2. Bleeding (spotty to profuse). 3. Some of the vesicles may be discharged with bleeding. 4. Uterus enlarges rapidly. 5. Severe vomiting. 6. Preeclampsia may appear early.	Removal of mole from the uterus. May be spontaneous, by oxytocin or D & C.

Complications	Cause	Symptoms	Prevention or Care
3. Ectopic pregnancy 1 in every 300 pregnancies	1. Growth of fetus outside of uterus (fallopian tubes-abdominal cavity). 2. Congenital abnormalities of the fallopian tubes. 3. Kinking of the tube due to adhesion resulting from infection. 4. Chronic inflammation of the tube. 5. Tumor outside of the tube pressing on the tube.	1. Amenorrhea. 2. Nausea and vomiting. 3. Stabbing, tearing pain on side. 4. Bleeding (may be only "spotting"). 5. Abdomen extremely tender. 6. Rupture brings dizziness, faintness, drop in blood pressure.	1. Surgery. (salpingectomy) 2. Bedrest. 3. Blood transfusion. 4. Reassurance. 5. Antibiotics.
4. Placenta previa	1. Placenta partially, marginally or completely over internal os. 2. Occurs most often when several pregnancies are close together.	1. Painless bleeding during second half of pregnancy.	1. Conservative management if fetus is premature and bleeding is not excessive. 2. Cesarean section. 3. Observe closely for hemorrhage. 4. Antibiotics as indicated.
5. Abruptio placentae	1. Premature separation of normally implanted placenta.	1. Painful bleeding. 2. May have no external bleeding. 3. Abdomen tender and painful. 4. Shock.	1. Cesarean section immediately. 2. Blood transfusion. 3. Antibiotics.

Source: Kalafatich & Meeks. Maternal and Child Health, Paterson, N.Y.: Littlefield, Adams, and Company, 1960.

Bethea, Doris C. Introductory Maternity Nursing, Philadelphia, PA: J.B. Lippincott Company, 1968.

Other Complications of Pregnancy

Complications	Cause	Symptoms	Prevention or Care
1. Premature Labor	Termination of pregnancy after the age of viability but before team. 1. Hypertensive vascular disease. 2. Abruptio placentae. 3. Placenta previa. 4. Untreated syphilis. 5. Multiple pregnancy. 6. Congenital abnormalities. 7. Cause unknown.	Onset of labor (contractions).	1. Reassurance to mother. 2. Promote comfort. 3. No pain medication due to premature fetus.
2. Hyperemesis gravidarum Vomiting that persists or occurs several times a day.	1. Organic: a. endocrine b. metabolic 2. Psychic: a. emotional disturbances	Vomiting that gives rise to: a. dehydration b. decrease in urinary output c. dry skin d. rapid pulse e. low-grade fever	1. Plenty of rest. 2. Avoid odors that precipitate attacks. 3. Small amounts of food with high CHO diet. 4. Vitamin B6 and complex. 5. Severe cases. a. complete bedrest, hospitalization. b. extreme quiet - no visitors. c. IV fluids d. sedation - phenobarbital and dramamine.

Complications	Cause	Symptoms	Prevention or Care
2. Continued -			e. nothing by mouth at first, later small feedings or liquids until tolerated. f. psychotherapy g. discussion of foods to avoid. h. intake and output. i. use "tact" when in contact with patient.
3. Toxemias a. Preeclampsia b. Eclampsia Occurs only during pregnancy, labor, or puerperium	True cause unknown	Preeclampsia: 1. Elevated BP a. headaches b. dizziness c. visual disturbances 2. Edema a. weight gain 3. Albuminuria Eclampsia: 1. All of the above. 2. Convulsions and coma.	1. Proper prenatal care: a. low-salt diet b. light activity 2. Complete bedrest 3. Dark room 4. Isolation 5. Check blood pressure 6. Hypertensive drugs 7. Low salt, high protein diet 8. Diuretics 9. Intake and output 10. Daily weight taken 11. Quantitative analysis of urine for albumin. 12. Sedatives

LEARNING ACTIVITIES - continued

ACTIVITY #6. The Rh Factor

Directions: Read this information.

The Rh factor is a protein substance found in the red blood cells. Approximately 85% of Caucasian people have this factor and are called Rh positive. The 15% who do not have it are Rh negative. An even higher percentage of people of other racial backgrounds are Rh positive; about 95% of Negroes and 99% of Chinese, for example, are Rh positive.

This peculiar name comes from the rhesus monkey that also has this blood protein. Much of the early experimental work with this factor was done on rhesus monkeys.

The Rh factor causes a problem only if an Rh negative mother becomes sensitized (allergic) to blood containing the Rh factor. Being "sensitized" means her blood will produce tiny particles called "antibodies" to fight off the Rh factor to which she is allergic.

With the Rh factor, as with any allergy, it is not clear how sensitization (or becoming allergic to Rh factor blood) occurs in a mother. However, the mother must be Rh negative and be allergic to Rh positive blood. It is believed that in the last three months of the pregnancy and during delivery, very small amounts of the new baby's blood, which is usually Rh positive, gets into the mother's blood. The mother's blood makes antibodies to fight this "invading" Rh factor, just as her blood forms antibodies to fight infections. This is a normal occurrence and does not influence the mother's health in any way.

The problem is created from the presence of Rh antibodies in the mother after the birth of her first child. When the next baby with Rh positive blood comes along, there is the possibility that the sensitized or allergic mother may transfer antibodies into his circulation. The antibodies will gradually destroy the baby's red blood cells with the Rh positive factor.

When parents have a compatible blood combination infant-mother sensitization cannot arise. Three blood combinations are always compatible:

1. Both parents are Rh positive.

2. Both parents are Rh negative

3. The mother is Rh positive and the father is Rh negative.

If the gene from each of your parents is Rh positive, then your blood is Rh positive. If the gene from each of your parents is Rh negative, your blood gene is Rh negative. If the gene from one of your parents is Rh positive and the gene from the other parent is Rh negative, then your genes are mixed. If you are Rh negative (a Rh negative gene from each parent) and your husband is Rh positive but with mixed genes, the Rh negative gene can be given by your husband to your child. There is a 50% chance that this will happen. If it does, the child will get Rh negative blood from you and from the father. There will be no complications in the child and you will not be sensitized (made allergic) to Rh positive factor for your next child.

Study the diagram on How "Rh" Disease Develops on page 27 to help you understand this process.

LEARNING ACTIVITIES - continued

The condition in newborns caused by the Rh factor is called erythroblastosis fetalis. Erythroblastosis may be so mild that only sensitive laboratory studies can detect its presence. It may take the form of anemia of mild to severe degree, or there may be progressive jaundice caused by a yellow pigment that comes from the destruction of red blood cells. Bilirubin is the term for the yellow pigment derived from destroyed blood cells. In any case of erythroblastosis, the physician will make frequent checks of the level of bilirubin in the baby's blood. These tests indicate the degree of jaundice.

The best guide to the mother's antibody "titer" is a measure of the concentration of antibody in her blood. This is measured in a number of different ways. Doctors speak of saline agglutininis, plasma albumin, and bovine measurements, trypsinized cell tests, indirect Coomb's and other complicated determinations. No matter how the antibody is measured, any marked or sudden increase will usually spell trouble.

The mild forms of erythroblastosis can be detected only by a number of sensitive blood tests. The most important of these is the direct Coomb's test that identifies virtually all cases of erythroblastosis due to the Rh factor. This test determines the presence of certain antibodies coating the infant's red cells. The mildest cases may require no treatment at all. Occasionally, a slow-developing anemia may require one or more small blood transfusions. For most cases, the chief medical resource is the "replacement" or "exchange" transfusion. In this case, a large percentage of the baby's Rh positive blood cells are removed and replaced by Rh negative cells from a donor's blood.

If anemia or jaundice is present at birth or develops rapidly thereafter, an exchange may be done within an hour or two after birth. On the other hand, if the initial tests are favorable, the doctor will wait and repeat the tests at intervals. In some cases, the procedure must be repeated two, three or even more times. In addition, some infants will need a simple blood transfusion for anemia several days to several weeks after an exchange. In an exchange, a small amount of the baby's blood is removed and an equal amount of donor blood given, then more blood is removed and another equal amount given!!! This process is repeated about fifty times in the average exchange transfusion. About 90% of the Rh positive cells can be replaced by donor Rh negative cells.

In most cases, the doctor does a small operation to find a vein in the naval or groin. The doctor opens the vein and inserts a plastic-like polythylene tube and threads this tube into a large internal vein from which blood can be quickly and easily obtained. The danger depends largely on the condition of the infant. There are several complications that can cause death during the early hours or days of the condition. These are: profound anemia, heart failure, hemorrhage and secondary infections such as pneumonia and kernicterus. Kernicterus is damage to the brain due to the yellow staining of bilirubin. Some injured brain cells may recover but others are destroyed. The most severe cases die within a few days. Most other infants with kernicterus suffer some permanent brain damage, which leads to several forms of cerebral palsy, mental retardation, deafness or a combination of these.

Presently on the market is a drug known as RhoGam. RhoGam is a sterile, concentrated solution of specific "gamma globulin" containing Anti-Rh, an antibody obtained from carefully screened human plasma by a cold alcohol method of fractionation.

LEARNING ACTIVITIES - continued

RhoGam is used to prevent the formation of active antibodies in the Rh negative mother who has delivered an Rh positive infant. With an injection to the post-partum mother of passive Rh antibody (RhoGam), the mother's antibody response to the foreign Rh positive fetal cells is suppressed.

Source: The Rh Factor and Parenthood, by Wyeth Laboratories, 1964. Wyeth Laboratories, Research, and Development in Nutritionals, Philadelphia, Pennsylvania. Ortho Diagnostics, Raritan, New Jersey. "So, You're Rh Negative" pamphlet.

ACTIVITY #7. Health Problems During Pregnancy

Directions: Read pages 113-137, Chapter 8, of Bethea. After you have read the chapter, define the terms 1-12, then complete the remaining exercises.

1. Maternal mortality: ____________________

____

2. Abortion: ____________________

   a. Spontaneous: ____________________

   b. Inevitable: ____________________

   c. Incomplete: ____________________

   d. Complete: ____________________

   e. Habitual: ____________________

   f. Missed: ____________________

   g. Therapeutic: ____________________

   h. Criminal: ____________________

   i. Voluntary: ____________________

3. Incompetent cervix: ____________________

____

4. Laminaria: ____________________

____

5. Hydatidiform mole: ____________________

____

LEARNING ACTIVITIES - continued

6. Ectopic pregnancy: ______________________________

7. Placenta previa: ______________________________

8. Abruptio placentae: ______________________________

9. Hyperemesis gravidarum: ______________________________

10. Erythroblastosis fetalis: ______________________________

11. Kernicterus: ______________________________

12. Bilirubin: ______________________________

13. Discuss the nursing consideration for a woman having an abortion.

14. State the three leading causes of maternal mortality.
    a. ______________________________
    b. ______________________________
    c. ______________________________

15. List the five ways spontaneous abortions are classified.
    a. ______________________________
    b. ______________________________
    c. ______________________________
    d. ______________________________
    e. ______________________________

LEARNING ACTIVITIES - continued

16. List three causes of ectopic pregnancy.

    a. ____________________

    b. ____________________

    c. ____________________

17. Describe the three types of placenta previa.

    a. Marginal: ____________________

    b. Central: ____________________

    c. Partial: ____________________

18. What is the main difference in the symptoms of abruptio placentae and placenta previa?

    ____

    ____

19. List some nursing responsiblities in treating health problems during pregnancy that involve bleeding.

    a. ____________________

    b. ____________________

    c. ____________________

    d. ____________________

    e. ____________________

20. What is premature labor? List causes for premature labor. __________

    ____

    ____

    ____

    ____

LEARNING ACTIVITIES - continued

21. State the L.P.N.'s responsibilities in treating the following problems during pregnancy.

    a. premature labor: ____________________

    ____

    b. hyperemesis gravidarum: ____________________

    ____

    c. toxemia: (1) preeclampsia: ____________________

    ____

    (2) eclampsia: ____________________

    ____

22. List the two types of toxemia and discuss the signs of each.

    a. ____________________

    ____

    b. ____________________

    ____

23. What danger could result from contracting rubella during the first 12 weeks of pregnancy?

    ____

    ____

24. What are three compatible blood combinations?

    a. ____________________

    b. ____________________

    c. ____________________

25. Name the drug given to Rh negative mothers (if indicated). ____________________

    ____

LEARNING ACTIVITIES - continued

26. Write a brief description explaining the Rh factor.

27. Discuss the effects of diabetes during pregnancy.

28. What is the fourth leading cause of maternal deaths?

29. Describe the precautions the pregnant woman with heart diseases should take.

30. What nursing observation should be considered on the patient with heart disease during labor?

31. Discuss the effect rubella, venereal disease, pyelonephritis and other infectious diseases may have on pregnancy.

LEARNING ACTIVITIES - continued

32. What effect can herpesvirus hominis type II have on the infant in utero?

ACTIVITY #8. High-Risk Parents and Infants

Directions: Read pages 138-148, Chapter 9, of Bethea and complete the following.

1. Define the term "high-risk" and give an example of a high-risk mother.

2. List five recommendations for the detection and care of high-risk parents and infants.

a.

b.

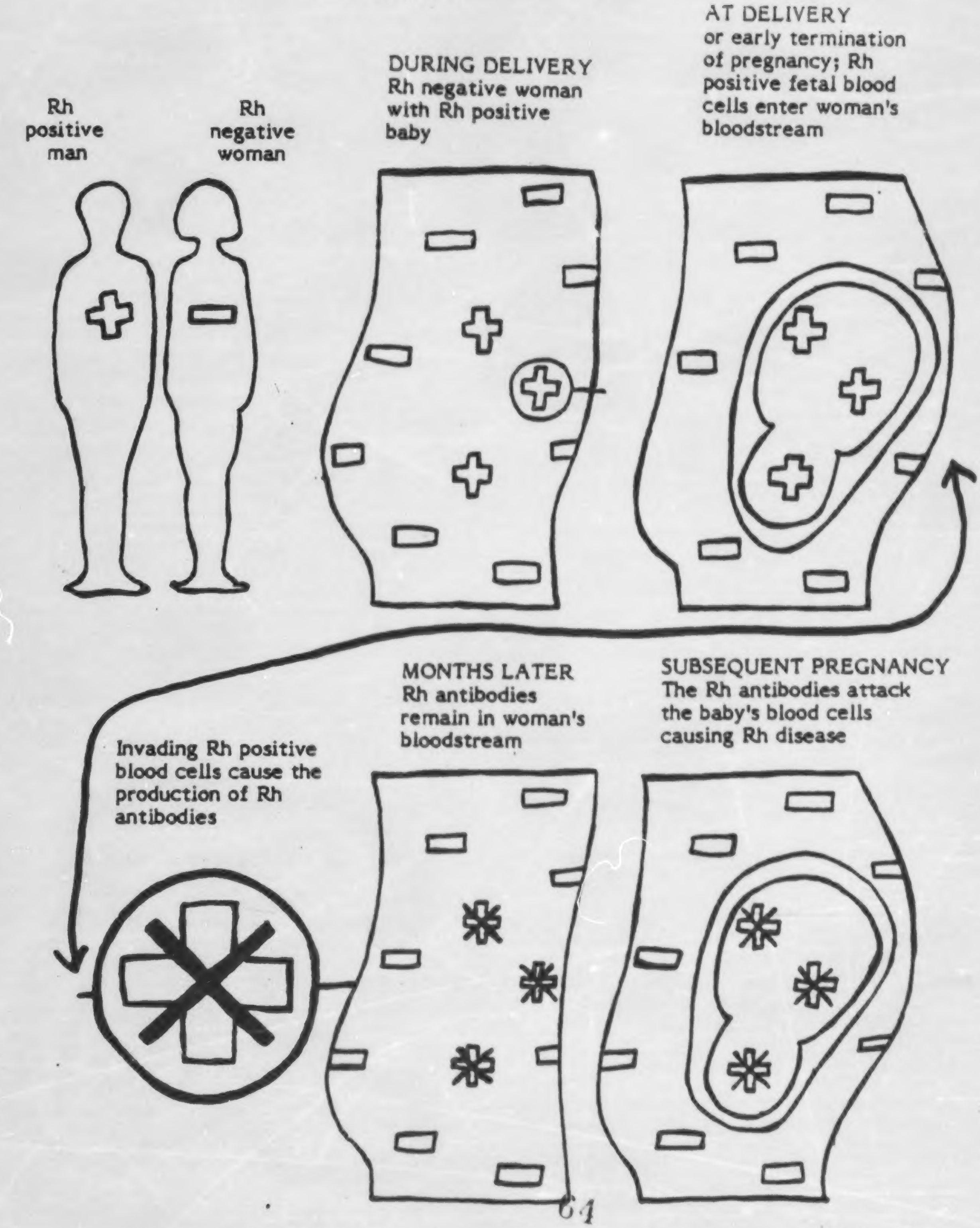
c.

d.

e.

LEARNING ACTIVITIES - concluded

HOW "RH" DISEASE DEVELOPS


Rh positive man
Rh negative woman
DURING DELIVERY
Rh negative woman with Rh positive baby
AT DELIVERY
or early termination of pregnancy; Rh positive fetal blood cells enter woman's bloodstream
Invading Rh positive blood cells cause the production of Rh antibodies
MONTHS LATER
Rh antibodies remain in woman's bloodstream
SUBSEQUENT PREGNANCY
The Rh antibodies attack the baby's blood cells causing Rh disease

POST TEST

Module A

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

SITUATION:

Mrs. P. G. has not been feeling well for several weeks. She has been quite nauseated in the morning and has felt continually fatigued, with intermittent leg cramping. She had menstrual periods beginning January 10, February 2 and March 4. She was due to begin her period April 2 but did not. Since Mrs. P. G. had not started her period and felt so poorly, she decided to see her doctor.

As the doctor examined Mrs. P. G., he noted that the vagina was a purplish color and the cervix was very soft. He decided to do a pregnancy test. The doctor told Mrs. P. G. he thought she was pregnant. As the doctor completed his examination, he further noted that the center line on Mrs. P. G.'s abdomen was somewhat dark and her face appeared to have a mask over it. Mrs. P. G. told the doctor that this was her second pregnancy but that she had miscarried a baby at two months gestation.

The following questions are based on this situation.

1. The first signs of pregnancy noticed by Mrs. P. G. are called:

   a. presumptive signs
   b. positive signs
   c. probable signs
   d. a and b
   e. b and c

2. In addition to fatigue, leg cramping and nausea, Mrs. P. G. can anticipate what other normal discomforts of pregnancy?

   1. constipation and flatulence
   2. rapid weight gain
   3. shortness of breath
   4. swelling of hands and face
   5. heartburn

   a. 1, 4, 5
   b. 1, 2, 3, 5
   c. 3, 4, 5
   d. 1, 2, 3, 4
   e. 1, 3, 5

POST TEST - continued

3. Leg cramping is thought to be caused by:

   1. circulatory impairment due to gravida uterus
   2. lack of phosphorous
   3. overstretching of the muscles of the legs
   4. lack of calcium

   a. 4
   b. 1, 2, 3
   c. 1
   d. 1, 3, 4
   e. 2, 3, 4

4. During the early months of pregnancy, a woman should be sure that her diet includes:

   1. an extra portion of carbohydrate foods daily
   2. foods rich in iron
   3. an extra pint of milk daily or extra fresh fruit
   4. enough protein to satisfy a daily requirement of 76 grams

   a. 2, 3, 4
   b. 3
   c. 1, 2, 3
   d. 1, 2, 3, 4

5. If Mrs. P. G. is pregnant, her EDC would be:

   a. December 4
   b. December 11
   c. January 7
   d. January 11

6. The method of arriving at Mrs. P. G.'s EDC is known as:

   a. Ballottement
   b. Chadwick's sign
   c. Godell's sign
   d. Naegele's rule
   e. Gravidavum

7. Mrs. P. G. can expect to be pregnant for approximately:

   a. 9 lunar months
   b. 40 weeks
   c. 10 calendar months
   d. 290 days

POST TEST - continued

8. Characteristic softening of the lower uterine segments during pregnancy is called:

   a. Chadwick's sign
   b. Hegar's sign
   c. Goodell's sign
   d. Braxton Hicks' sign

9. Mrs. P. G.'s purplish color of the vagina is called:

   a. Goodell's sign
   b. Hegar's sign
   c. Chadwick's sign
   d. a, c
   e. none of the above

10. The signs of pregnancy found by the doctor (purplish color of the vagina and softening of the cervix) are called:

    a. positive signs
    b. presumptive signs
    c. subjective signs
    d. probable signs
    e. b, c

11. The pregnancy test that has largely replaced the use of animals is called:

    a. Friedman test
    b. Ascheim-Zondek test
    c. Hogben test
    d. Immunologic test

12. Rebounding of the floating fetus when lightly tapped is called:

    a. striae gravidarum
    b. ballottement
    c. linea nigra
    d. chloasma

13. The masklike effect on Mrs. P. G.'s face is known as:

    a. discoloration
    b. clomid
    c. clitoris
    d. colostrum
    e. chloasma

POST TEST - continued

14. Mrs. P. G.'s gravida and para would be

    a. Gravida II, Para O
    b. Gravida II, Para I
    c. Gravida II, Para II
    d. Gravida I, Para O

15. The termination of pregnancy through natural causes is:

    a. therapeutic abortion
    b. complete abortion
    c. incomplete abortion
    d. spontaneous abortion

16. The period of time between Mrs. P. G.'s conception and forthcoming birth is called:

    a. gestation
    b. parturition
    c. conception
    d. a, c

17. Since Mrs. P. G. is pregnant for the second time, she is called:

    a. primigravida
    b. nullipara
    c. prima para
    d. multigravida
    e. multipara

SITUATION:

As the months progress, Mrs. P. G.'s abdomen becomes larger and larger. Mrs. P. G.'s laboratory work has all been completed and the doctor finds that Mrs. P. G. is Rh negative. The following questions are based on this situation.

18. Each time Mrs. P. G. visits the doctor, her routine prenatal exam will include:

    a. pelvic exam and urinalysis
    b. BP urinalysis and weight check
    c. RBC hemoglobin and clinitest
    d. differential blood count and PH
    e. none of the above

19. The above are checked each time to evaluate Mrs. P. G. for signs and symptoms of:

    a. toxemia
    b. placenta previa
    c. hyperemesis gravidarum
    d. diabetes mellitus

POST TEST - continued

20. Symptoms of this condition would be:

    1. bleeding
    2. weight gain
    3. albuminuria
    4. elevation of 30 mm in systolic BP
    5. fatigue

    a. 1, 3, 4
    b. 1, 2, 3
    c. 2, 3, 4
    d. 2, 4, 5

21. Mrs. P. G. questions the nurse about the Rh factor. The nurse explains to Mrs. P. G. that in order to have a potential Rh factor problem, the wife must be Rh___ and the husband Rh___.

    a. Rh- and Rh-
    b. Rh- and Rh+
    c. Rh+ and Rh+
    d. Rh+ and Rh-

22. Since Mrs. P. G. is becoming larger and larger with each visit to the doctor, he advises her that her total weight gain during pregnancy should not be more than:

    a. 8-10 lbs
    b. 20-25 lbs
    c. 10-15 lbs
    d. 12-20 lbs

23. One way the doctor can assure that Mrs. P. G.'s baby is doing fine in utero is to:

    a. check Mrs. P. G.'s urine
    b. check Mrs. P.G.'s BP
    c. listen to fetal heart tone
    d. do a pelvic examination

24. As Mrs. P. G. is getting dressed after being examined, she questions the nurse about the thin, yellowish fluid that is beginning to leak from her breast. The nurse explains to Mrs. P. G. that this substance is:

    a. milk
    b. striae
    c. colostrum
    d. chloasma
    e. c, d

POST TEST - continued

25. The nurse would advise Mrs. P. G. to get in touch with the doctor immediately if she experienced:

    1. bleeding of bright blood
    2. persistent headache
    3. persistent vomiting
    4. visual disturbances
    5. constipation.

    a. 1, 2, 3, 4
    b. 1, 2, 4, 5
    c. 2, 3, 4, 5
    d. 1, 3, 4, 5
    e. all are correct.

SITUATION:

Dick and Karen have been married for six years and Karen has been unable to become pregnant. Karen and Dick have both been checked for sterility and both test results were negative. The following questions relate to the above situation.

26. It may help Karen to become pregnant if Dick and Karen know that ovulation occurs ___ days before the beginning of the next menstrual period.

    a. 7
    b. 10
    c. 14
    d. 15
    e. 16

27. How many sperms are required to fertilize the ovum in identical twins?

    a. 1
    b. 2
    c. 3
    d. 4

28. Six months after Karen's last visit to the doctor, she missed two menstrual periods. After seeing the doctor, she found she was approximately six weeks pregnant. The union of Dick and Karen's sex cells is called:

    a. fertilization
    b. gestation
    c. conception
    d. a, c
    e. a, b

POST TEST - continued

29. What hormone will maintain the thickening of Karen's endometrium?

    a. estrogen
    b. progesterone
    c. chorionic gonadotropin
    d. LH

30. During Karen's pregnancy, what system will show the most marked change?

    a. circulatory system
    b. reproductive system
    c. respiratory system
    d. urinary system
    e. endocrine system

31. During pregnancy, Karen's endometirum becomes very thick and is called the:

    a. chorion
    b. amnion
    c. ectoderm
    d. decidua

32. The vessel in the umbilical cord that carries nourishment and oxygen from the placenta to the fetus is the:

    a. artery
    b. vein
    c. umbilical cord
    d. placental artery

33. The umbilical cord contains:

    a. 1 artery and 2 veins
    b. 2 veins and 1 artery
    c. 1 vein and 2 arteries
    d. 1 artery and 1 vein

34. Protein is extremely necessary for Karen since she became pregnant. Protein is essential for:

    a. developing new muscles in the uterus
    b. formation of hemoglobin
    c. growth and development
    d. all are correct
    e. none are correct

POST TEST - continued

35. The skeletal development of Karen's unborn baby may be seriously affected if her prenatal diet does not contain adequate amounts of:

    1. vitamin A
    2. calcium
    3. phosphorous
    4. vitamin E

    a. 1
    b. 2
    c. 2, 3
    d. 2, 3, 4
    e. all are correct

36. Quickening usually occurs about the:

    a. fourth week of pregnancy
    b. eighth week of pregnancy
    c. third month of pregnancy
    d. fourth month of pregnancy
    e. sixth week of pregnancy

37. Karen is now in her seventh lunar month of pregnancy. She begins to complain of painless bleeding. This is a characteristic symptom of:

    a. miscarriage
    b. placenta previa
    c. abruptio placentae
    d. abortion

38. Karen's doctor immediately checks fetal heart tones to see if the fetus is being affected by the bleeding. The normal range of fetal tones is:

    a. 90-100 beats per minute
    b. 180 beats per minute
    c. 120-160 beats per minute
    d. 90-140 beats per minute

39. One of the three causes of maternal mortality is hemorrhage. What are the two other causes?

    a. lack of prenatal care and toxemia
    b. toxemia and puerperal infection
    c. multiple pregnancies and infection
    d. lack of prenatal care and puerperal infection
    e. multiple pregnancies and toxemia

POST TEST - continued

40. If Karen's pregnancy terminates now, in her seventh month, it is classified as:

    a. spontaneous abortion
    b. therapeutic abortion
    c. term labor
    d. toxemia
    e. premature labor

SITUATION: The following questions relate to the fetus M.B.

41. OH!! BOY!! The graafian follicle is rupturing, and I, the mature egg, am expelled!! This is called:

    a. ovulation
    b. fertilization
    c. proliferative phase
    d. conception

42. What a tickling and bumpy ride! These wave-like movements are propelling me, the mature ova, along the fallopian tube to the uterus. The wavelike movements that propels M.B. along are:

    a. cilia and peristaltic action
    b. fimbriae and ovulation
    c. peristaltic and increase of estrogen
    d. fimbriae and FSH

43. M.B. has now been fertilized by Papa. The number of chromosomes in the zygote is:

    a. 46 and 2 sex factors
    b. 48 and 2 sex factors
    c. 42 and 2 sex factors
    d. 44 and 2 sex factors

44. After M.B.'s long trip down the fallopian tube, the inner cell mass begins to form three germ layers. Which layer will develop M.B.'s respiratory tract?

    a. ectoderm
    b. entoderm
    c. mesoderm

POST TEST - continued

45. M.B. is contained in a snug little sack filled with fluid. What important purpose does this fluid serve?

    1. provide nourishment for M.B.
    2. something for M.B. to drink
    3. protects M.B. from external injury
    4. keeps temperature constant
    5. permits M.B. to move about freely and keeps the amnion from adhering to him

    a. 1, 3, 4, 5
    b. 1, 2, 3, 4
    c. 2, 3, 4, 5
    d. all are correct

46. The skin of M.B. is protected from maceration by:

    a. amniotic fluid
    b. lanugo
    c. vernix caseosa
    d. subcutaneous fat

47. Wastes are transmitted from the fetus to the placenta by:

    a. one vein
    b. two arteries
    c. a cord
    d. one artery
    e. two veins

48. The organs of M.B., an embryo, become differentiated:

    a. during the first lunar month
    b. during the second lunar month
    c. during the third lunar month
    d. at conception

49. M.B., an embryo, becomes a fetus after:

    a. 4 weeks
    b. 8 weeks
    c. 16 weeks
    d. 12 weeks

50. An acute infectious disease that often results in malformation of the infant is:

    a. pneumonia
    b. german measles
    c. polio
    d. influenza

POST TEST - continued

51. Another name for the above infectious disease is:

    a. rubella
    b. echo virus II
    c. varcella
    d. rubeola
    e. roselia

52. What opening is present between the right and the left atrium of M.B.'s fetal heart.

    a. ductus venosus
    b. foramen ovale
    c. ductus arteriosus

53. M.B.'s mother can possibly relieve morning sickness by:

    1. eating dry toast on awakening
    2. eating small amounts frequently
    3. increasing liquid intake
    4. resting after meals

    a. 1, 2, 4
    b. 1, 3, 4
    c. all are correct
    d. none are correct

54. M.B., the fetus, survives in a state of:

    a. delirium
    b. anoxia
    c. hypoxia
    d. dehydration
    e. delusion

55. M.B.'s (fetal) blood and the mother's blood:

    a. are part of the same circulation
    b. are separate circulations
    c. join at the umbilical cord
    d. join to exchange blood

Directions: The following questions are unrelated to any situation. Answer each question individually.

56. The female organ of sexual excitation is the:

    a. vagina
    b. perineum
    c. fascia
    d. vestibule
    e. clitoris

POST TEST - continued

57. The area extending from the lower border of the vaginal opening down to the anus is called the:

    a. perineum
    b. pudendum
    c. vulva
    d. lavator ani

58. What part of the breast is responsible for secreting milk?

    a. ducts
    b. nipples
    c. acini
    d. lobules

59. One of the normal discomforts of pregnancy is backache. It is due to the stretching of which ligaments?

    a. round ligaments
    b. broad ligaments
    c. flat ligaments
    d. a, b
    e. a, b, c

60. The hormone responsible for stimulating the follicle is:

    a. LH
    b. LDH
    c. FSH
    d. LSH

61. Fertilization usually takes place in the:

    a. uterus
    b. vagina
    c. ovaries
    d. fallopian tubes

62. Which layer of the uterus contains muscle fiber that controls bleeding following delivery?

    a. perimetrium
    b. myometrium
    c. endometrium

POST TEST - continued

63. Swelling of the feet:

    1. calls for restricted sodium intake
    2. is relieved by elevating the feet
    3. should be reported to the doctor
    4. may be relieved by changing shoes

    a. all are correct
    b. 1, 2, 3
    c. none are correct
    d. 3, 4

64. Varicose veins can be prevented by:

    1. using laxatives regularly
    2. avoiding any type of constriction
    3. resting with legs elevated
    4. walking rather than standing still
    5. preventing constipation

    a. 2, 3, 4, 5
    b. 1, 3, 4, 5
    c. 1, 2, 3, 4
    d. 1, 2, 3, 5

65. Rho Gam is given when:

    a. mother is Rh+ Baby Rh+
    b. mother is Rh- Baby Rh-
    c. mother is Rh- Baby Rh+
    d. mother is Rh+ Baby Rh-

66. Premature separation of a normal, implanted placenta is called a/an:

    a. placenta previa
    b. abruptio placentae

67. When the placenta completely covers the internal os, it is called:

    a. central placenta previa
    b. marginal placenta previa
    c. partial placenta previa

68. A stabbing pain during pregnancy might indicate:

    a. placenta previa
    b. abruptio placentae
    c. ectopic pregnancy
    d. nephritis

POST TEST - continued

69. A termination of pregnancy to protect maternal health is called a/an:

    a. elective abortion
    b. complete abortion
    c. incomplete abortion
    d. therapeutic abortion
    e. spontaneous abortion

70. Toxemia may occur:

    a. anytime in a woman's life
    b. during postpartum period
    c. during prenatal care
    d. during a case of German measles
    e. b, c

71. The sex of the new individual is determined at:

    a. two weeks gestation
    b. two months gestation
    c. conception
    d. two days gestation

72. After fertilization, implantation in the uterus takes place in approximately:

    a. 7 to 9 days
    b. 24 hours
    c. 14 days
    d. 2 to 3 days

73. What special fetal structure passes fetal blood from the umbilical veins into the inferior vena cava?

    a. foramen ovale
    b. decidua basalis
    c. ductus arteriosus
    d. ductus venosus

74. An abortion in which part of the products of conception are not expelled is called:

    a. therapeutic
    b. threatened
    c. inevitable
    d. incomplete
    e. complete

POST TEST - concluded

75. During pregnancy, the blood volume increases approximately:

    a. 20%
    b. 30%
    c. 40%
    d. 50%
    e. 60%

76. The fold of mucous membrane at the opening of the vagina is called the:

    a. urinary meatus
    b. hymen
    c. clitoris
    d. corpus

77. Medical conditions that may cause an expectant mother to be considered "high risk" are:

    a. marital status and age
    b. socioeconomic status and number of children
    c. diabetes and chronic hypertension
    d. none are correct

78. The fingerlike projections at the end of the fallopian tube nearest the ovary are called:

    a. cilia
    b. feminism
    c. fermentation
    d. digit
    e. fimbriae

79. A patient suddenly shows weight gain and increased blood pressure at 28 weeks. This indicates:

    a. ecopic pregnancy
    b. toxemia
    c. placenta previa
    d. hyperemesis gravidarum

80. Which of the following are NOT essential in the pregnant patient's diet?

    a. citrus fruits
    b. butter and margarine
    c. green vegetables
    d. eggs

ANSWERS TO POST TEST

Module A

1. a
2. e
3. d
4. a
5. b
6. d
7. b
8. b
9. c
10. d
11. d
12. b
13. e
14. a
15. d
16. a
17. d
18. b
19. a
20. c
21. b
22. b
23. c
24. c
25. a
26. c
27. a
28. d
29. b
30. b
31. d
32. b
33. c
34. d
35. c
36. d
37. b
38. c
39. b
40. e
41. a
42. a
43. d
44. b
45. d
46. c
47. b
48. a
49. a
50. b
51. a
52. b
53. a
54. c
55. b
56. e
57. a
58. c
59. d
60. c
61. d
62. b
63. b
64. a
65. c
66. b
67. a
68. c
69. d
70. e
71. c
72. a
73. d
74. d
75. b
76. b
77. c
78. e
79. b
80. b

unit 18

NURSING CARE OF MOTHERS AND NEWBORNS

Module B - Meeting the Patient's Needs in Labor and Delivery

RATIONALE

As a health worker involved in meeting patients' nursing needs in labor and delivery, you must understand the process of normal labor and delivery so that you can give safe and effective nursing care.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Recognize characteristics of:
    a. the signs of approaching labor.
    b. the process of normal labor.
    c. the phases of contractions.
    d. the three stages of labor.
    e. the variations of normal labor.
2. Recognize the nursing care given to a woman during the three stages of labor and immediately following delivery.
3. Distinguish between "true" and "false" labor.
4. Identify normal fetal heart rate, the purpose for fetal heart monitoring and signs of fetal distress.
5. Identify the various fetal presentations and positions.
6. Identify the purpose and the effects of medications used during the three stages of labor.
7. Recognize the complications of labor and the causes, prevention, symptoms, nursing care used and treatments for each.
8. Identify the different types of anesthesia used in labor and delivery. Recognize the advantages and disadvantages of each, the criteria that determine which one to use, their effects on the fetus and the mother and the nursing care necessary in following the administration.
9. Recognize the different types of perineal lacerations.
10. Identify the care of the baby immediately following delivery.

PERFORMANCE OBJECTIVES - continued

11. Recognize the need for forceps, C-sections and the induction of labor. Identify the characteristics of each and the nursing care given.

12. Recognize terms in the vocabulary exercise in this module.

CLINICAL OBJECTIVES

To the instructor's satisfaction, when given a labor patient as an assignment, you will:

1. Identify signs of approaching labor.

2. Describe and report your observations to the appropriate person.

3. Construct nursing notes specific to the patient.

4. Demonstrate the following according to your textbook and the procedure manual that you will find in the clinical area:

    a. Admission to the labor room.

    b. Perineal shave (after observing procedure once).

    c. Enema

    d. Time contractions and record them in specified place.

    e. Record fetal heart tone rate in the specified place.

    f. Make the patient comfortable during the three stages of labor.

5. Identify the three stages of labor and their symptoms and demonstrate the appropriate nursing care.

6. Identify true labor from Braxton-Hicks contraction by applying the theory according to your textbook.

7. Identify any indications for a C-section and meet patient's needs accordingly.

8. Identify the practical nurse's functions in labor and delivery.

9. Describe to your instructor and fellow students your patient's labor and delivery experience.

LEARNING ACTIVITIES

Directions: In order to complete Module B, you will read your textbook Introductory Maternity Nursing by Doris C. Bethea and answer the questions about what you have read. After you have answered an exercise, go back and check your answers with the text. You will find some interesting and important diagrams for your to study in this module.

LEARNING ACTIVITIES - continued

Here is a poem for you to read.

DELIVERY DILEMMA[1]

"Primiparas just stop and go
No hurry in their journey.
The frantic ones with kids at home
Can barely reach the gurney.

Variety is spice, I hear,
And does relieve the tedium
But for my nerves I wish these gals
Could strike a happy medium."

[1] Vinyard, Norma. American Journal of Nursing, December 1970.

ACTIVITY #1. True and False Labor

Directions: Read and study the differences between true and false labor.

DIFFERENTIAL FACTORS IN TRUE AND FALSE LABOR*

True Labor	False Labor
Contractions:	Contractions:
Occur at regular intervals	Occur at irregular intervals
Intervals gradually shorten	Intervals remain long
Intensity gradually increases	Do not increase in intensity
Located chiefly in back	Located chiefly in abdomen
Intensified by walking	Relieved by walking
Show:	Show:
Usually present	None
Cervix:	Cervix:
Becomes effaced and dilated	Usually uneffaced and closed

*Source: Fitzpatrick, Eastman, Reeder. Maternity Nursing, Philadelphia, PA: J.B. Lippincott Company, 1970.

ACTIVITY #2. Labor and Delivery Experience Sheet

Directions: On the next page is a sample of a typical sheet you will fill out when you take care of a woman in labor and delivery. Labor and delivery experience sheets vary from hospital to hospital. Fill in this sheet with all the necessary information.

LEARNING ACTIVITIES - continued

EXAMPLE I
LABOR AND DELIVERY
EXPERIENCE SHEET

Age of Patient: ____________ Gravida: ____________ Para: __________ Ab. __________

Show: ______ RH: __________ Protein in urine: __________ Sugar in urine: __________

Membranes rupt.:__ Spont. artif. Date: _____ Color Fluid:_______ E.D.C.: __________

Temp: ______ Pulse ________ Resp. _________ B/P:______ No. of prenatal visits _____

Drugs the patient received before delivery: ____

____

Type of anesthesia the patient received: ____

____

Episiotomy (if any) ____

Presentation of fetus: ________________________ Apgar of fetus @ 1 min. __________ @ 2 min. __________

Drugs given after the birth to patient ____

Length of labor: 1st stage: ______________ 2nd: ______________ 3rd: ______________

Explanation of length and progression of labor of this individual patient.

____

____

____

____

PROGRESSION OF LABOR:

TIME	FREQUENCY	DURATION	INTENSITY	F.H.T.	DIL. CX	STATION

LEARNING ACTIVITIES - continued

PROGRESSION OF LABOR (cont.)

TIME	FREQUENCY	DURATION	INTENSITY	F.H.T.	DIL. CX	STATION

Mother's condition following birth:

B/P	FUNDUS	LOCHIA

ACTIVITY #3. Stages of Labor

Directions: Read and study this chart.

Stages of Labor Chart: A Guide for Supporting Mothers in Labor

STAGE ONE: The Dilatation Stage: This period begins with the onset of true labor contractions and ends with complete dilatation of the cervix. This period lasts from 2-16 or more hours.

Phase/Internal Progress	Characteristics	How She May Feel	What She May Do
"Entertainment" When cervix dilates 1 cm. to 4 cm.	Uterine contractions may follow a regular pattern and be accompanied by: Abdominal cramps. Backache. Rupture of membranes. Show (blood-tinged mucoid vaginal discharge).	Excited. A sense of anticipation. A sense of relief. Happy. Some apprehension.	Carry on with normal activities if possible or keep diverted with other activities of interest. Eat and drink only if doctor allows. Time duration and frequency of contractions. Ask doctor when to go to the hospital.
"Relaxation" When cervix dilates 4 cm. to 8 cm.	Uterine contractions become stronger, longer (40 to 45 seconds), more frequent.	Apprehensive. A growing seriousness. Ill-defined doubts/fears. Desire for companionship. Uncertainty about coping with contractions.	Assume most comfortable position. Relax. Ask for medication if unable to relax. When doctor does a rectal or vaginal examination, relax pelvic floor.

Stage One - continued

Phase/Internal Progress	Characteristics	How She May Feel	What She May Do
"Transition" When cervix dilates 8 cm. to 10 cm.	Uterine contractions may become stronger, longer (50 to 60 seconds). Legs cramp. Amnesia between contractions. Generalized discomfort. Hiccoughing. Irritable abdomen. Shaking of legs. Marked restlessness. Nausea. Vomiting. Low backache. Perspiration of upper lips and forehead. Profuse, dark, heavy show.	Increasingly apprehensive. Irritable and unwilling to be touched. Frustrated and unable to cope with contractions if left alone. Feels like "just cannot stand it anymore." Eager to be "put to sleep."	Relax as much as possible. Have back rubbed, if aches. Ask for medications.

Stages of Labor Chart: A Guide for Supporting Mothers in Labor

STAGE TWO: The Expulsive Stage: This period begins with the complete dilatation of the cervix and ends with the birth of the baby. This period lasts from 2-60 or more minutes.

Phase/Internal Progress	Characteristics	How She May Feel	What She May Do
"Active Participation" Full dilatation of the cervix.	Contractions may be 1 to 2 minutes apart, becoming increasingly expulsive in nature. Increased show. Expulsive grunt when exhaling. Rectal bulging with flattening of the perineum. Gradual appearance of presenting part at vaginal opening.	Relief - 2nd stage has begun. Desire to bear down or push. Acute pain with push. Desire to move bowels. Unable to follow directions easily. A splitting sensation due to extreme vaginal stretching as the baby is born.	Notify nurse of desire to bear down. Respond to urge to push. If in own bed: (1) take deep breath, (2) bend knees, spread them apart and grasp them firmly while bringing them up towards shoulders, (3) with mouth closed, pull back on knees while bearing down or pushing, keeping hips flat on bed. If in delivery room: (1) take deep breaths, (2) grasp hand grips at side of delivery table, (3) with mouth closed, pull back on hand grips while bearing down or pushing, keeping hips flat on delivery table and relaxing pelvic floor. Continue to push down for as long as each contraction lasts. Rest completely between contractions. If necessary, ask for anesthesia. Pant when asked to do so or when asked not to.

Stages of Labor Chart: A Guide for Supporting Mothers in Labor

STAGE THREE: The Placental Stage: This period begins after the birth of the baby and ends with the expulsion of the placenta and the membrane. This period lasts from 1 to 20 or more minutes.

Phase/Internal Progress	Characteristics	How She May Feel	What She May Do
Placenta is delivered.	Contractions are temporarily ceased upon birth of baby. When they resume, they usually are painless and may be accompanied by the following: Upward rise of the uterus in abdomen. Uterus assuming a globular shape. Visable lengthening of umbilical cord as placental moves into vagina. Trickle or gush of blood.	Exhausted, but elated and proud of the achievement. She may also feel eager to hear and to see the baby. A sense of relief. Delight that abdomen is flat. Ravenously hungry. Thirsty.	Relieve tension by giving in to emotions. Watch expulsion of placenta and membranes in overhead mirror. Ask to have baby put to breast for a first feeding.

Source: Weidenback, Ernestine. Family Centered Maternity Nursing, G.P. Putnam's Sons, New York, NY, 1968. University of California, Los Angeles School of Nursing. Progressing and Working in Labor, Los Angeles, CA.

ACTIVITY #4. Types of Anesthesia Used for Delivery

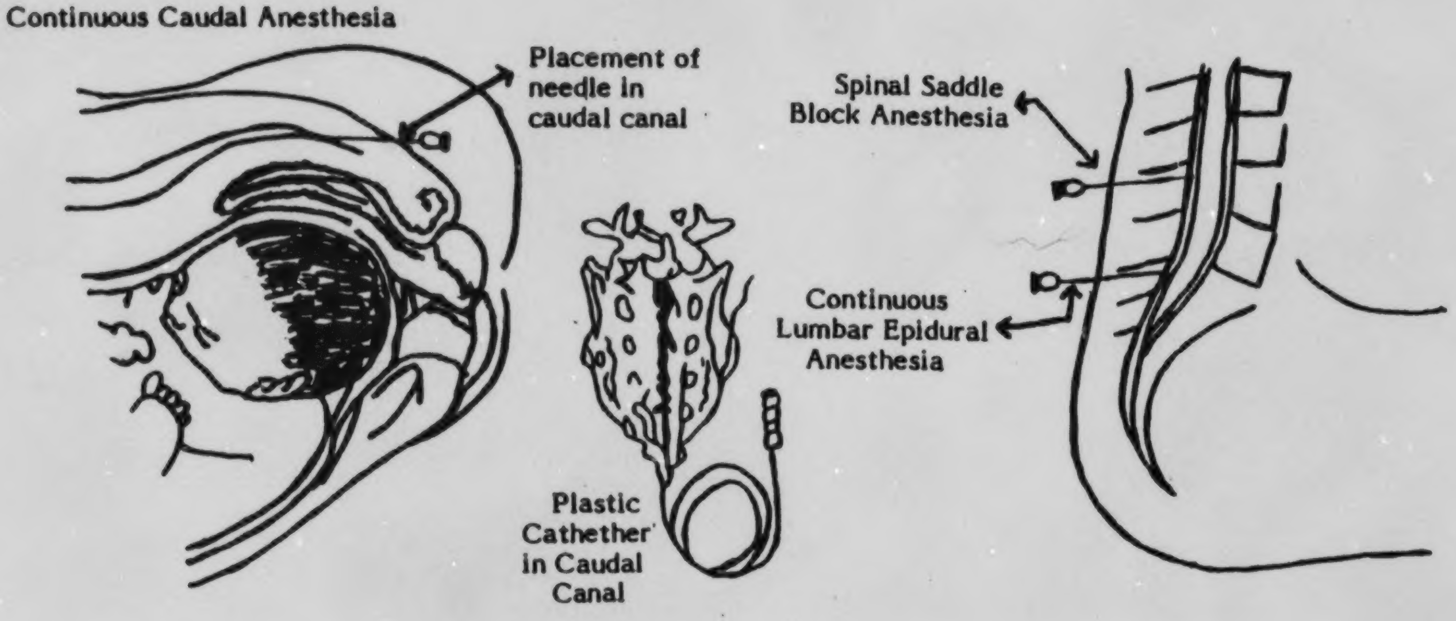
Directions: Read and study the following chart and diagram on page 12 concerning anesthesia used for delivery.

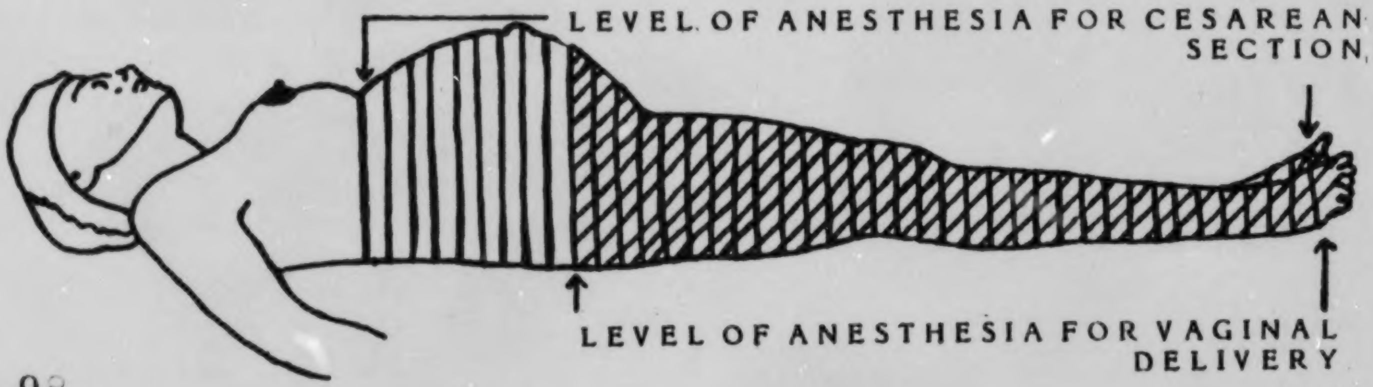
Regional Anesthesia and Analgesia					
Type	**Area given**	**Area Anesthetized**	**Effects**	**Effects on Baby**	**Contraction Felt**
Pudendal Block	Pudendal nerves supplying the perineum.	Perineal skin more successful made thru vaginal mucous directly over the ischial spines.	Marked relaxation of the perineal muscles.	None	Yes
Paracervical Block	Nerves on each side of cervix.	Transvaginal injection of anesthetic solution for each side of the cervix.	Relieves uterine contractions for longer period of time.	Slight fetal bradycardia, occasionally.	Some discomfort may be felt but can be relieved for 45 to 60 minutes.
Caudal Anesthesia	Blocking the nerve in the predural space.	Introduced into the predural space via the sacral hiatus.	Analgesia to the 10th thoracic dermatone (umbilicus).	None (unless maternal systolic drops below 100 mg/hg.)	No Disadvantages: Second stage prolonged. Forceps required. Hypotension.
Spinal Anesthesia	Introduced at L-3/L-4 level.	Introduced into the spinal column.	Painless delivery. May decrease the uterine contractions.	None (unless maternal systolic drops).	No May increase the need for forceps. Hypotension.
Epidural Anesthesia	Introduced into lumbar area of epidural space.	Introduced into the spinal column.	Painless delivery. Contraction not effected.	None (unless hypotension in mother).	No

Types of Anesthesia Used for Delivery

General Anesthesia					
Type	**Area**	**Method**	**Effects**	**Effects on Baby**	**Contraction Felt**
Trilene	Central nervous system	Usually inhaled by mask held by the patient.	General depression	Less than with complete anesthesia but risk still present.	Periodically
Penthrane Nitrous oxide Cyclopropane	Central nervous system	Inhaled through mask.	Complete anesthesia	Prolonged use may cause respiratory depression. Hypoxia.	No
Sodium pentothal	Central nervous system	IV	Complete anesthesia	Produce fetal as well as maternal hypoxia.	No

REGIONAL ANESTHESIA IN OBSTETRICS


Continuous Caudal Anesthesia
Placement of needle in caudal canal
Plastic Cathether' in Caudal Canal
Spinal Saddle Block Anesthesia
Continuous Lumbar Epidural Anesthesia


LEVEL OF ANESTHESIA FOR CESAREAN SECTION
LEVEL OF ANESTHESIA FOR VAGINAL DELIVERY

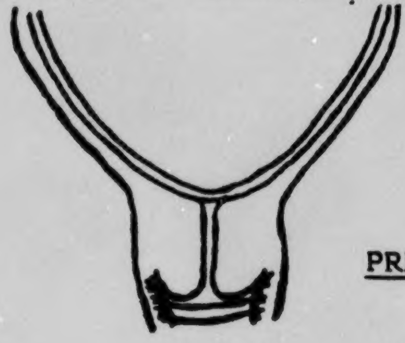
LEARNING ACTIVITIES - continued

ACTIVITY #5. Cervical Effacement and Dilatation

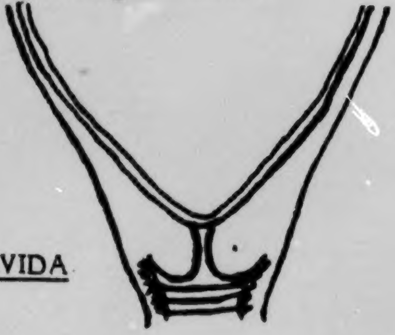
Directions: Study the following diagrams.

Effacement and dilation occur during the first stage of labor.

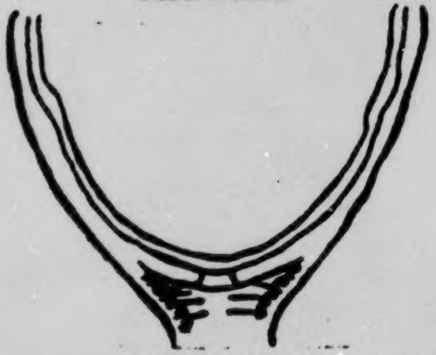
PRIMIGRAVIDA



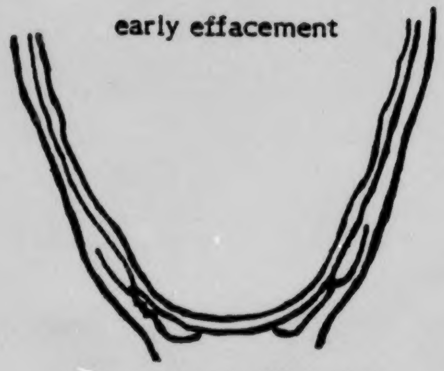
before labor



early effacement

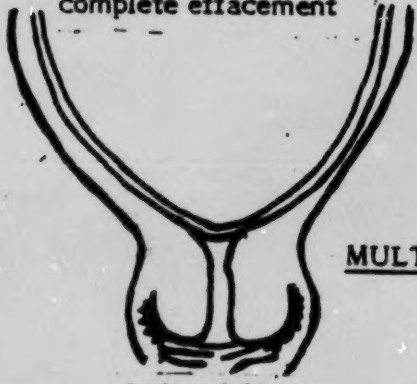


complete effacement

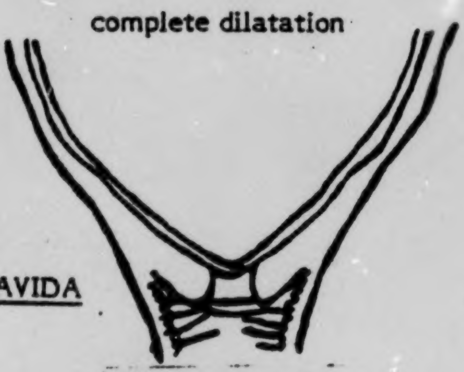


complete dilatation

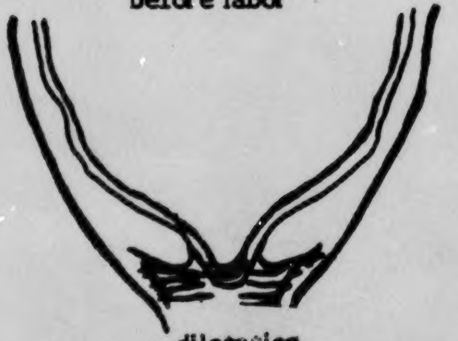
MULTIGRAVIDA



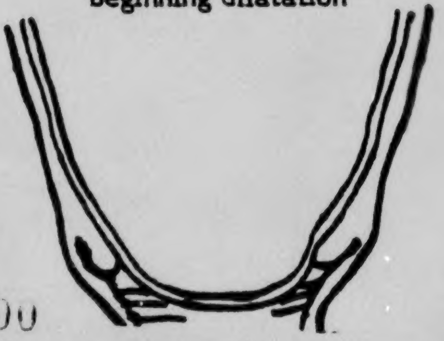
before labor



effacement and
beginning dilatation



dilatation



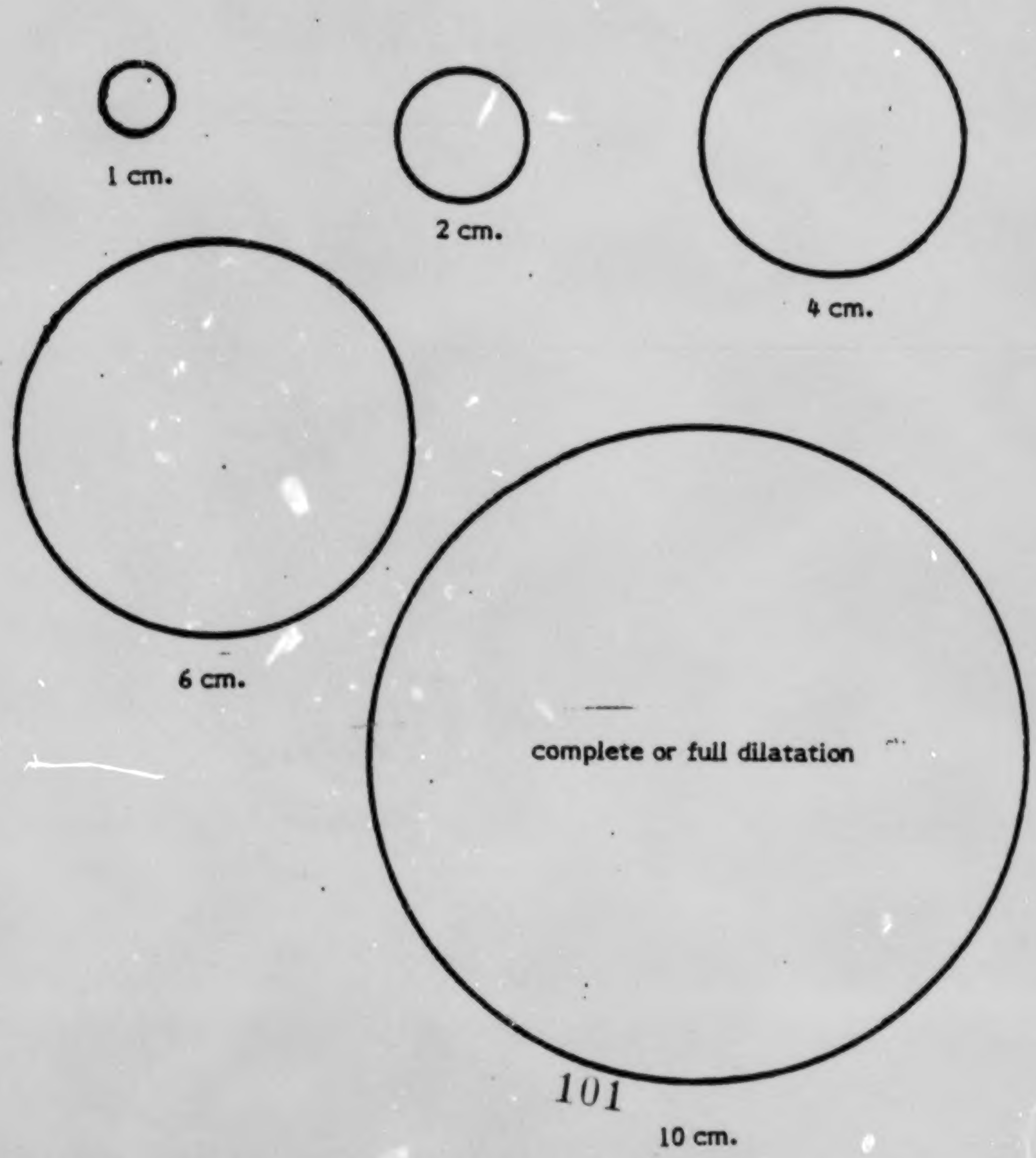
complete dilatation

LEARNING ACTIVITIES - continued

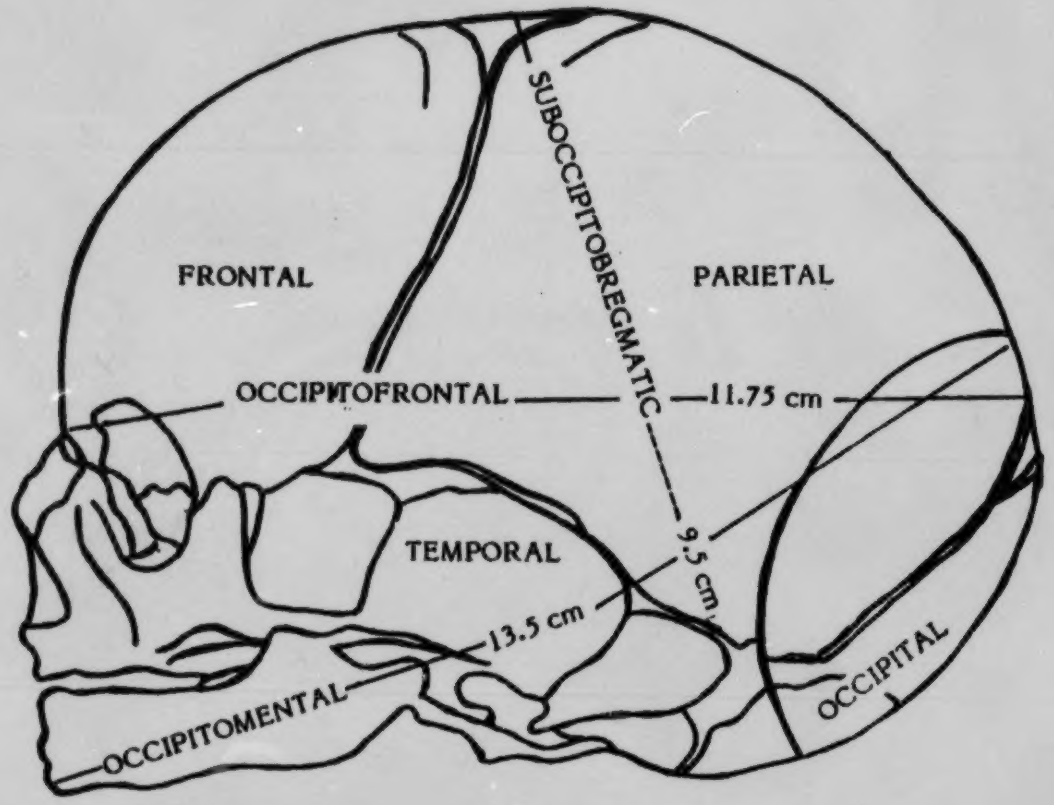
Aid for Visualization of Cervical Dilatation

This page will help you to visualize the change in size of cervical dilatation from the beginning of labor, 1 cm., to complete or full dilatation, 10 cm.

Through a vaginal examination, the physician or nurse can determine which stage of labor the patient is in.


1 cm.
2 cm.
4 cm.
6 cm.
complete or full dilatation
10 cm.

Cranial Measurements of the Full-Term Normal Neonate

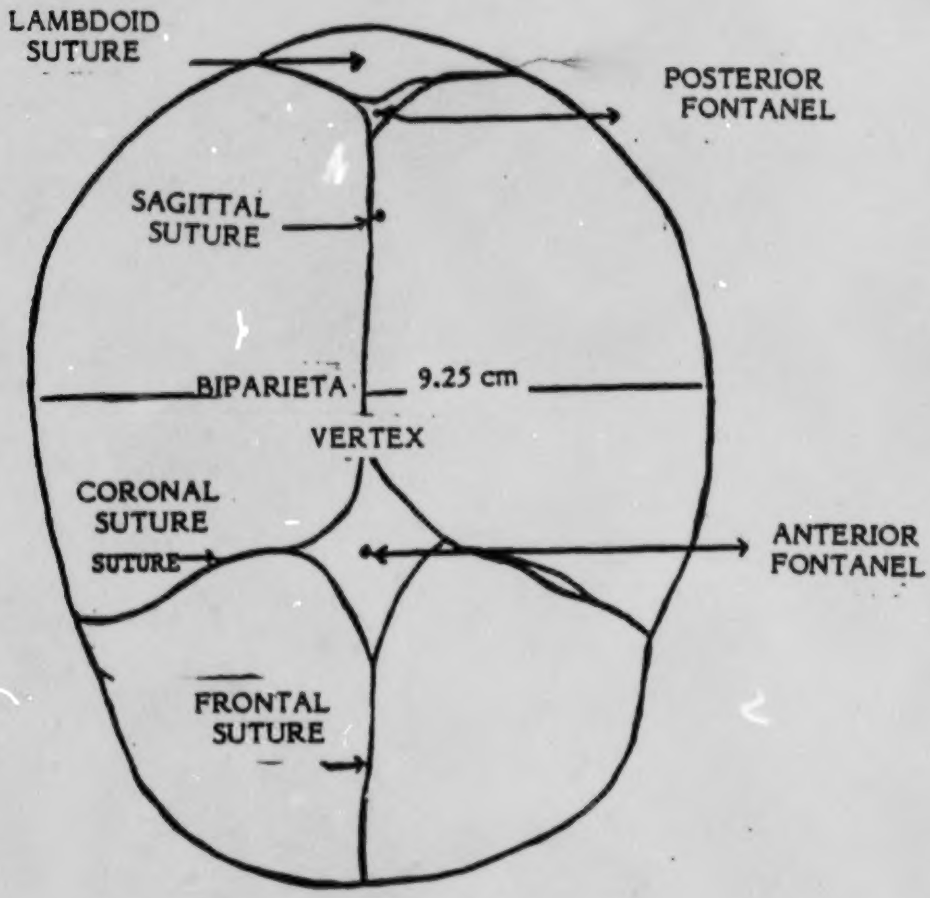

FRONTAL
PARIETAL
SUBOCCIPITOBREGMATIC
OCCIPITOFRONTAL
11.75 cm
9.5 cm
TEMPORAL
13.5 cm
OCCIPITOMENTAL
OCCIPITAL

Frontal -- 2 bones
Parietal -- 2 bones
Temporal -- 2 bones
Occipital -- 1 bone

The diagram above shows you the cranial diameters found in the full-term normal fetus. These are important because the size of the neonate's head cannot be larger than the mother's pelvic measurements in order to have a normal vaginal delivery.

LEARNING ACTIVITIES - continued

Vertex Presentation

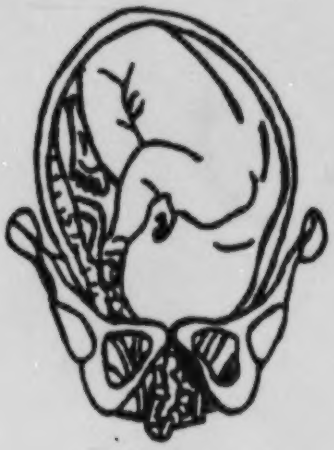

LAMBDOID SUTURE
POSTERIOR FONTANEL
SAGITTAL SUTURE
BIPARIETA
9.25 cm
VERTEX
CORONAL SUTURE
SUTURE
ANTERIOR FONTANEL
FRONTAL SUTURE

By studying this diagram, you can see the position of a vertex presentation. As the doctor performs a vaginal examination during labor, his/her fingers examine the suture lines and he/she can tell in which position the head will be at birth.

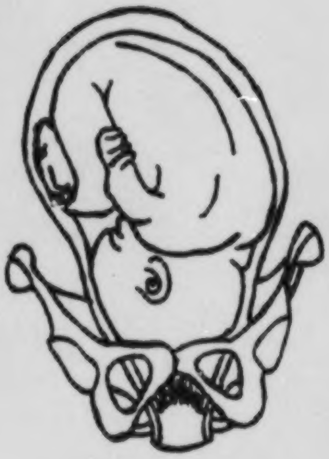
The diagrams on pages 15-18 show you the various presentations that are possible. These diagrams show both the vertex and the breech presentations.

LEARNING ACTIVITIES - continued

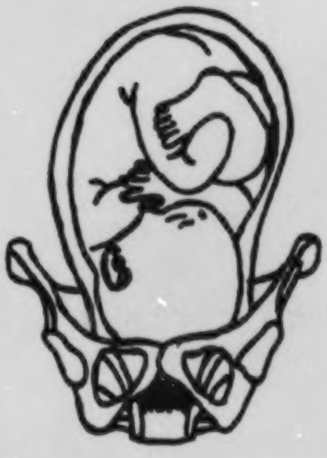
Categories of Presentation



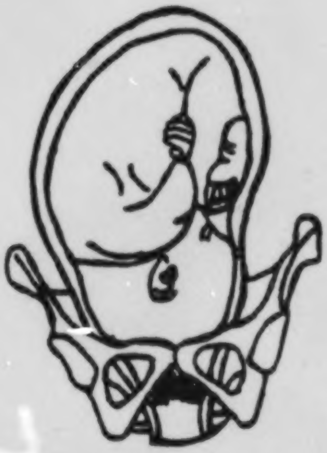
PROLAPSE OF CORD



L.O.A.
(Left Occiput Anterior)



R.O.P.
(Right Occiput Posterior)

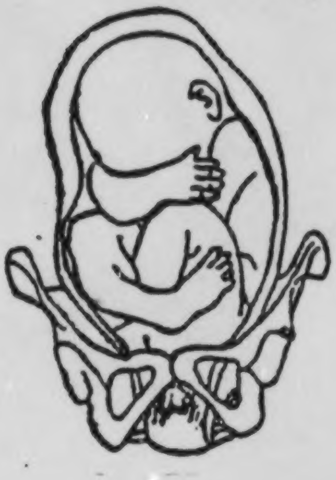


R.O.T.
(Right Occiput Transverse)

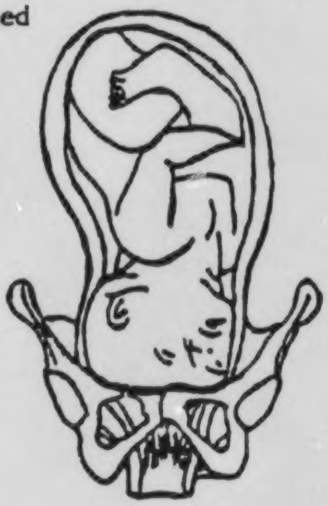
Source: Nursing Education Service, Ross Laboratories, Columbus, Ohio, 1958.

LEARNING ACTIVITIES - continued

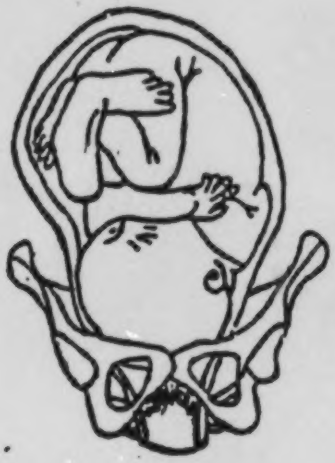
Categories of Presentation - continued



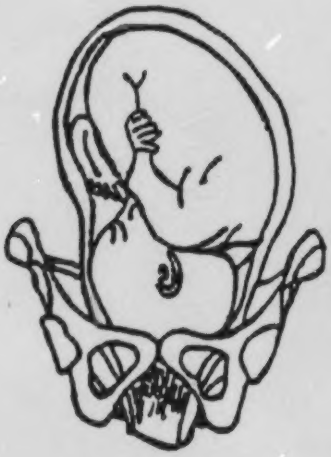
L.S.P.
(Left Sacrum Posterior)



BROW PRESENTATION



L.O.P.
(Left Occiput Posterior)

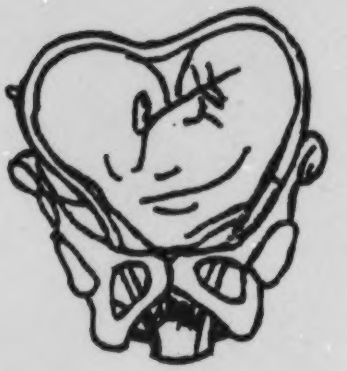


L.O.T.
(Left Occiput Transverse)

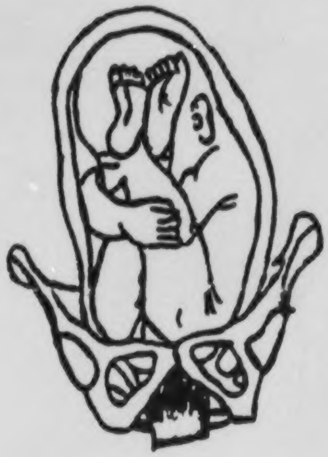
Source: Nursing Education Service, Ross Laboratories, Columbus, Ohio, 1958.

LEARNING ACTIVITIES - continued

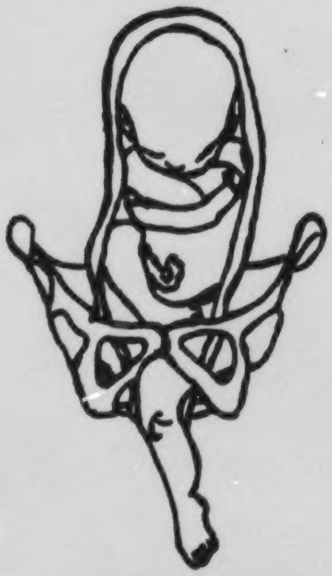
Categories of Presentation - continued



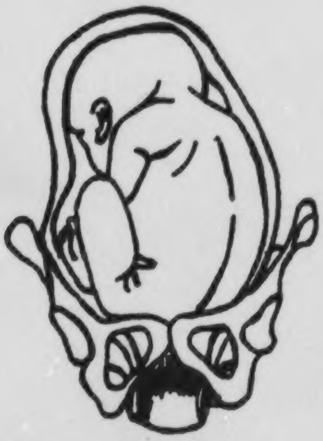
SHOULDER PRESENTATION



FRANK BREECH



INCOMPLETE BREECH

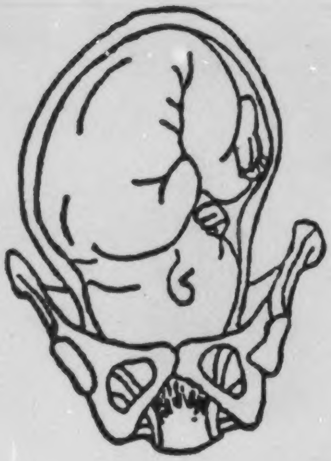


L.S.A.
(Left Sacrum Anterior)

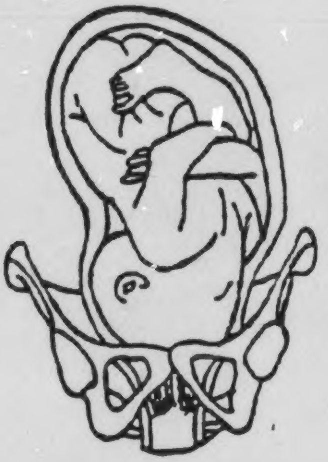
Source: Nursing Education Service, Ross Laboratories, Columbus, Ohio, 1958.

LEARNING ACTIVITIES - continued

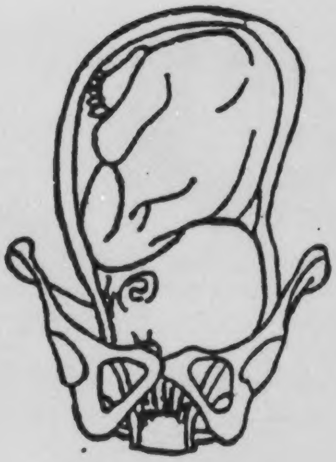
Categories of Presentation



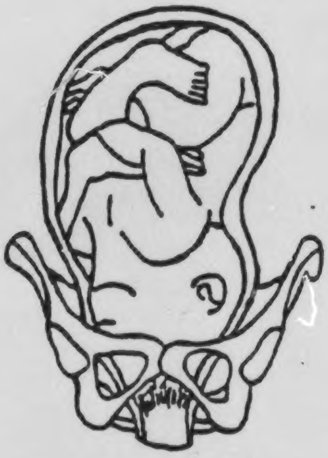
R.O.A.
(Right Occiput Anterior)



L.M.A.
(Left Mentum Anterior)



R.M.P.
(Right Mentum Posterior)



R.M.A.
(Right Mentum Anterior)

Source: Nursing Education Service, Ross Laboratories, Columbus, Ohio, 1958.

LEARNING ACTIVITIES - continued

ACTIVITY #6. Process of Normal Labor

Directions: Read Chapter 10, pages 151-168, of Bethea. After you have read the chapter, define the terms 1-17, then complete the remaining exercises. You may use your textbook.

1. Labor: ____________________

2. Lightening: ____________________

3. Presentation: ____________________

4. Vertex: ____________________

5. Breech: ____________________

6. Station: ____________________

7. Engaged: ____________________

8. Floating: ____________________

9. Position: ____________________

LEARNING ACTIVITIES - continued

10. Effacement: ____________________

11. Dilatation: ____________________

12. Amniotomy: ____________________

13. Episiotomy: ____________________

14. Saddle block: ____________________

15. Caudal block: ____________________

16. Pudendal block: ____________________

17. Epidural: ____________________

18. State four signs of impending labor.

    a. ____________________

    b. ____________________

    c. ____________________

    d. ____________________

LEARNING ACTIVITIES - continued

19. List six characteristics of false labor.

a. ____________________

b. ____________________

c. ____________________

d. ____________________

e. ____________________

f. ____________________

20. State the purpose of timing obstetrical contractions. ____________________

____

____

21. Name and explain the three phases of a contraction.

a. ____________________

b. ____________________

c. ____________________

22. List and explain the three stages of labor.

a. ____________________

b. ____________________

c. ____________________

23. List two possible dangers following early rupture of the membranes.

a. ____________________

b. ____________________

24. What are the three purposes for an episiotomy?

a. ____________________

b. ____________________

c. ____________________

LEARNING ACTIVITIES - continued

ACTIVITY #7. Nursing Care During Labor

Directions: Read Chapter 11, pages 169-197, of Bethea. After you have read the chapter, complete the following exercise.

1. State the purpose of listening to fetal heart tone. ______________________________

____

2. Name three indications of fetal distress.

a. ____

b. ____

c. ____

3. State the purpose of the delivery room enema and prep (shave). ______________

____

____

4. A doctor may order bedrest for a woman if the membranes have ruptured and the presenting part is high. Explain why.

____

____

____

5. What is often the first sign of the second stage of labor? ____________________

____

6. Name four common oxytoxic drugs given after the placenta is expelled.

a. ______________________ c. ______________________

b. ______________________ d. ______________________

7. What is opthalmia neonatorum? How is it prevented? ____________________

____

____

LEARNING ACTIVITIES - continued

8. List four measures that are taken to prevent infection in mother and baby.

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

9. List three observations made throughout labor.

   a. ______________________________

   b. ______________________________

   c. ______________________________

10. List four signs of fetal distress.

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

11. What may meconium stained amniotic fluid indicate? ______________

    ____

    ____

12. List six items that the nurse records on the chart regarding the birth.

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

    e. ______________________________

    f. ______________________________

LEARNING ACTIVITIES - continued

13. List the three most important nursing responsibilities in an emergency delivery with an explanation of each.

    a. ____________________

    b. ____________________

    c. ____________________

14. What is a precipitate delivery? ____________________

    ____

    ____

ACTIVITY #8. Complications of Labor

Directions: Read and study the following chart.

Complications of Labor

COMPLICATIONS	CAUSES	NURSING CARE
Dystocia: (difficult labor) 1. Uterine dysfunction a. Hypertonic uterine disfunction (strong and ineffective contractions in producing dilation).	1. Subnormal uterine or abdominal force (grand multiparity or over distension of uterus). 2. Faulty presentation. 3. Disproportion between size of infant and birth canal (such as hydrocephalus). 4. Sedated too early or in excess.	1. X-ray pelvimetry to check for position, C.P.D. or abnormalities. 2. If none of the above is present, then stimulation by artificial rupture of bags of water or pitocin. 3. Constant reassuring of family and keeping them informed. 4. Keep doctor informed of progress or lack of progress. 5. Close monitoring of the fetal heart and observing for meconium stained amniotic fluid.
b. Hypotonic uterine dysfunction (contractions effective in dilating the cervix to at least 3 cm., then decrease in strength and fail to dilate cervix further).		1. X-ray pelvimetry to check for position, C.P.D. or abnormalities. 2. If none of the above is present, then stimulation by artificial rupture of bags of water or petocin. 3. Constant reassuring of family and keeping them informed. 4. Keep doctor informed of progress or lack of progress.

Complications of Labor - continued

COMPLICATIONS	CAUSES	NURSING CARE
Prolapse of umbilical cord.	1. Rupture of the bag of waters when the presenting part does not fit snugly into the pelvis.	1. Listen to fetal heart tones q 10 minutes especially after R.B.O.W. 2. If cord prolapses, elevate the patient's hip to "knee-chest" or Trendelenburg position. 3. Call physician and prepare to administer oxygen; prepare for cesarean section. 4. Reassure the patient.
Abnormal presentations or abnormalities of the baby.	1. No special causes. a. Excessive weight. b. Ancephaly. c. Hydropcephalus. d. Abdomen enlarged. e. Breech presentation. f. Transverse presentation. g. P.O.P. (Persistent occiput posterior). h. C.P.D. (Cephalo Pelvic Disproportion).	1. Assist the doctor, as instructed. 2. Report any unusual symptoms. 3. Reassure and encourage the patient. 4. Be prepared for a cesarean section. 5. Be prepared for a forceps delivery. 6. Keep the patient in bed.

Complications of Labor - continued

COMPLICATIONS	CAUSES	NURSING CARE
Rupture of the uterus.	1. Contracture of the pelvis. 2. Previous cesarean section. 3. Injudicious use of oxytoxics in labor. 4. Multiparity. 5. Prolonged or obstructed labor. 6. Malpresentations.	Observe for: 1. Classical: a. Increased pain and tenderness. b. Patient describes sensation. c. Fetal heart tone disappears. d. Uterus is firm and remains contracted. e. Fetus felt easily through abdominal wall. f. Bleeding. May be internal, so watch for shock. 2. Be prepared for emergency hysterectomy. 3. Reassure the patient. 4. Early diagnosis is essential.
Postpartal hemorrhage. Hemorrhage following delivery of the placenta of 500 cc's or more.	1. Uterine atony 2. Lacerations of the perineum, the vagina and the cervix. 3. Retained placental fragments.	1. Massage uterus, if necessary, grasp firmly, avoid overmassage. 2. Give ergotrate preparation as ordered. 3. Elevate the feet into shock position. 4. Reassure the patient and do not leave her. 5. Assist the doctor in manual removal of placenta, if necessary. 6. Have plasma and blood ready for a transfusion.

Source: Kalafatich and Meeks. Maternal and Child Health, Patterson, N.J.: Littlefield, Adams, and Company.

Fitzpatrick, Reeder. Maternity Nursing, Philadelphia, PA: J.B. Lippincott Company, 1971.

LEARNING ACTIVITIES - continued

ACTIVITY #9. Variations of Normal Labor and Delivery

Directions: Read pages 198-212, Chapter 12, of Bethea. After you have read the chapter, define the terms 1-10, then complete the remaining exercise.

1. Operative obstetrics: ______________________________
2. Version: ______________________________
3. Vacuum extraction: ______________________________
4. Dystocia: ______________________________
5. Primary inertia: ______________________________
6. Secondary inertia: ______________________________
7. Cephalopelvic disproportion (C.P.D.): ______________________________
8. Classical cesarean section: ______________________________
9. Low cervical cesarean section: ______________________________
10. Hydramnios: ______________________________

LEARNING ACTIVITIES - continued

11. What is the purpose of forceps and what is the difference between low and mid forceps?

____

____

12. Name seven indications for a cesarean section.

a. ____________________________________
b. ____________________________________
c. ____________________________________
d. ____________________________________
e. ____________________________________
f. ____________________________________
g. ____________________________________

13. Name four ways to induce labor.

a. ____________________________________
b. ____________________________________
c. ____________________________________
d. ____________________________________

14. Describe the two-bottle or "piggy back" method of oxytocin infusion.

____

____

____

LEARNING ACTIVITIES - concluded

15. List three kinds of breech presentations and briefly describe each.

    a. ____________________

    b. ____________________

    c. ____________________

16. List four potential problems during labor. State one appropriate nursing measure for each potential problem you have listed.

    a. ____________________

    b. ____________________

    c. ____________________

    d. ____________________

17. Discuss the symptoms, cause and treatment of supine hypotensive syndrome.

POST TEST

Module B

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

SITUATION:

Mrs. Garcia is admitted to the labor room at 0700 with contractions every five minutes lasting 35-40 seconds. She is somewhat uncomfortable. Mrs. Garcia has no other children. She started labor at 0130. On admission, her blood pressure was 112/80 and fetal heart tones were 144 per minute, regular and of good quality. A vaginal examination revealed that Mrs. Garcia was 3 cm. dilated and 50% effaced with the unborn infant's head 1 cm. below the ischial spines.

The following questions are based on the above situation.

1. Mrs. Garcia knew that she was in true labor and not "false labor" because:

   a. the contractions were rhythmic, increasing in intensity with cervical changes
   b. the contractions were rhythmic and confined to the lower abdomen
   c. the contractions were rhythmic, not increasing in intensity
   d. the contractions were rhythmic, confined to the lower abdomen and relieved by walking

2. Normal fetal heart tones are:

   a. 110 to 160 irregular
   b. 100 to 140 regular
   c. 100 to 140 irregular
   d. 110 to 160 regular

3. Mrs. Garcia is having a discharge of a thick, stringy mucus streaked with blood. This is called:

   a. effacement
   b. amniotic fluid
   c. station
   d. show

4. Mrs. Garcia's contractions are q 5 minutes lasting 35 to 40 seconds and moderate. This tells us what about Mrs. Garcia's labor?

   a. dilation, effacement and station
   b. intensity, duration and frequency
   c. frequency, duration and intensity
   d. frequency, duration and dilation

POST TEST - continued

5. The purpose of uterine contractions during the first stage of labor is to:

   a. push the baby closer to the vaginal opening
   b. rupture the bag of waters
   c. push out the mucous plug
   d. shorten and widen the cervical opening

6. Mrs. Garcia will be given an enema during the first stage of labor. The purpose of the enema at this time is to:

   1. empty the rectum and prevent contamination during delivery
   2. clear rectum for digital examination
   3. empty the rectum to hasten labor
   4. relieve constipation
   5. stimulate uterine contractions

   a. 1, 3, 5
   b. 2, 3, 4, 5
   c. 1, 2, 3, 5
   d. 1, 3, 4

7. The presentation of Mrs. Garcia's baby is:

   a. breech
   b. P.O.P.
   c. vertex
   d. transverse

8. The blood pressure is checked frequently during labor:

   1. to determine the progress of labor
   2. to detect a beginning of toxemia
   3. to keep a record for charting
   4. because medication may cause drop in BP (fetal distress)

   a. 1, 2, 3
   b. 2, 4
   c. 2, 3, 4
   d. 1, 3, 4

9. A drug that induces loss of memory of pain during labor is called:

   a. a sedative
   b. an anesthetic
   c. an analgesic
   d. an amnesic

POST TEST - continued

10. The presenting part is usually engaged when it reaches the level of the:

    a. ischial tuberosity
    b. iliac chest
    c. ischial spines
    d. perineum

11. After several hours, Mrs. Garcia becomes very restless, irritable and nauseated. Her legs are shaky and she cannot control them. This may indicate:

    a. the beginning of the first stage
    b. beginning of the second stage
    c. beginning of the third stage
    d. beginning of the transition phase

12. Mrs. Garcia has an active role to play during the:

    a. first stage
    b. second stage
    c. third stage
    d. all are correct

13. Mrs. Garcia is embarrassed by the position and the exposure when pushing. To lessen the embarrassment, the nurse can:

    a. provide privacy
    b. keep her covered
    c. explain the procedure
    d. all are correct

14. Ergotrate is frequently used following delivery. It is:

    a. an oxytocic
    b. an analgesic
    c. a lactation suppressant
    d. an antiemetic

SITUATION:

Mrs. Logan is a Gravida V, Para IV. She had just seen the doctor who said she was 5 cm. dilated and sent her to the hospital to be admitted. Mrs. Logan is having very moderate contractions. Shortly after Mrs. Logan arrived, her bag of water ruptured and the amniotic fluid was a greenish color.

The following questions relate to the above situation.

15. Amniotic fluid is normally what color?

    a. greenish
    b. amber
    c. meconium stained clear
    d. pink

POST TEST - continued

16. Warning signs of fetal distress include:

    1. FHT below 110
    2. FHT above 160
    3. meconium stained amniotic fluid in vertex presentation
    4. late deceleration
    5. smooth baseline

    a. 1, 2, 3
    b. 2, 3, 4, 5
    c. 1, 3, 4, 5
    d. all are correct

17. Had Mrs. Logan's bag of waters needed artificial rupture, this would be called:

    a. fetation
    b. amniocentesis
    c. pelvimentry
    d. amniotomy

18. During the examination, the nurse found that Mrs. Logan's child was in breech presentation. After palpating her abdomen, the nurse could feel at the top of the abdomen what felt like feet and a head. Based on this, what breech presentation is Mrs. Logan's baby in?

    a. footling breech
    b. frank breech
    c. complete breech
    d. double footling breech

19. After several hours, Mrs. Logan's labor fails to progress and she remains at 5 cm. What type of uterine dysfunction might Mrs. Logan have?

    a. hypertonic
    b. primary inertia
    c. secondary iertia
    d. a, c

20. The doctor decides to give Mrs. Logan medication (I.V. pitocin) to induce labor once again. The intentional staring of labor by mechanical or medical means is necessary with complications such as:

    1. toxemia
    2. placenta previa
    3. diabetes
    4. abruptio placentae
    5. hydramnios

    a. 1, 3, 5
    b. 1, 2, 3, 4
    c. 2, 3, 4, 5
    d. all are correct

POST TEST - continued

21. Since Mrs. Logan is receiving I.V. pitocin, a responsible person must be in constant attendance because improper induction of labor using oxytocin may result in:

    1. rupture of the uterus
    2. premature separation of the placenta
    3. fetal hypoxia
    4. CPD

    a. 1, 3, 4
    b. 1, 2, 4
    c. 2, 3, 4
    d. 1, 2, 3

22. Mrs. Logan is now completely dilated and pushing. She is taken into the delivery room. Mrs. Logan wants a saddle block for delivery. One of the possible dangers to the mother of a saddle block is:

    a. hypotension
    b. hypertension
    c. fetal distress
    d. hypoxia of the baby at birth

23. After receiving the saddle, Mrs. Logan's legs are placed into the stirrups, both at the same time. This is to prevent strain on the:

    a. flat ligaments
    b. abdomen muscles
    c. pelvic ligaments
    d. perineal ligaments

24. As Mrs. Logan's baby crowns, an episiotomy is done to prevent:

    1. ragged laceration
    2. undo pressure on the infant's head
    3. a lengthy second stage
    4. the need for local anesthetic
    5. prolapse of the cord

    a. 1, 3, 4, 5
    b. 1
    c. 1, 2, 3
    d. 1, 2, 3, 4

25. The widening of the cervix is called:

    a. engagement
    b. effacement
    c. dilation
    d. station

POST TEST - continued

26. The oxytoxic medication given after delivery to help prevent hemorrhage will:

    1. increase clotting time of the blood
    2. put the patient at complete rest
    3. contract the uterine muscle
    4. increase the blood pressure

    a. 1, 4
    b. 2, 3
    c. 3, 4
    d. 2, 4
    e. 1, 3, 4

27. Postpartal hemorrhage may be caused by:

    1. failure of the uterine muscles to contract
    2. cervical laceration
    3. lack of adequate hemoglobin
    4. incomplete elimination of the placenta
    5. incompetent cervix

    a. 1, 2, 5
    b. 4
    c. 1, 2, 4
    d. 2, 3, 4
    e. 1, 2, 4, 5

SITUATION:

Mrs. Yazzie is admitted to the labor room. Her membranes have been ruptured for 36 hours. Fetal heart tones are 180. She is having strong contractions every three minutes. The cervix is 3 cm. dilated and the baby's head can just barely be felt upon vaginal examination.

The following questions relate to the above situation.

28. Since Mrs. Yazzie's membranes have been ruptured for more than 24 hours, there is a danger of:

    a. cesarean section
    b. rapid delivery
    c. infection
    d. dry birth

POST TEST - continued

29. Since Mrs. Yazzie has had ruptured membranes for 24 hours, it is essential to:

    1. check for temperature elevation
    2. maintain strict aseptic techniques to prevent infection
    3. check for sudden bleeding
    4. check for hypertension

    a. 1
    b. 1, 2
    c. 2
    d. 1, 2, 4
    e. 2, 3, 4

30. The descent of the baby's head into the pelvic region is called:

    a. floating
    b. effacing
    c. lightening
    d. engaging

31. There is a possibility for the umbilical cord to come down the birth canal before the baby's head is engaged. This is called:

    a. prolapsed cord
    b. Braxton Hicks
    c. placenta previa
    d. abruptio placentae

32. After several hours, Mrs. Yazzie has not made any progress and the FHT are now only 105 and the cervix is only 3 to 4 cm. If the fetus is in distress and the cervix is not dilated, the nurse can expect that delivery will be by:

    a. induction
    b. cesarean section
    c. low forceps
    d. high forceps

33. The safest anesthesia for Mrs. Yazzie's delivery would be:

    a. spinal
    b. general
    c. pudendal
    d. ether

34. Immediately after the baby's birth, the state law requires that medicine be put into the baby's eyes to prevent:

    a. blindness
    b. ophthalmia neonatorum
    c. retrolental fibroplasia
    d. a, b

POST TEST - continued

Directions: Answer the following questions individually.

35. In a second degree laceration, what is the extent of the tear?

    a. mucus membrane, skin and muscle of the perineum
    b. mucus membrane and skin
    c. sphincter muscle of the anus as well as the other tissue
    d. labia majora and labia minora

36. A narcotic used to relieve pain and relax the cervix is:

    a. Phenergan
    b. Scopolamine
    c. Compazine
    d. Demerol

37. The practical nurse student is assigned to the labor room. If the patient complains of headache, the student must recognize the importance of:

    1. an aspirin
    2. preeclampsia
    3. a cold compress to the head
    4. a blood pressure reading

    a. 1
    b. 2, 3
    c. 4
    d. 2, 4
    e. 1, 2, 4

38. Indications for a cesarean section are:

    1. cephalopelvic disproportion
    2. previous cesarean section
    3. abruptio placentae
    4. fetal distress
    5. breech position in a primagravida

    a. 1, 2, 3, 4
    b. 1, 3, 4, 5
    c. 2, 3, 4
    d. all of the above
    e. 2

39. Which vertex presentation, if it persists, may make delivery slow and difficult?

    a. L.O.P.
    b. P.O.P.
    c. R.O.P.
    d. L.O.A.

POST TEST - continued

40. A prolapsed cord can be expected whenever the presenting part of the fetus is:

    1. floating
    2. in breech position
    3. in great distress from oxygen want
    4. failing to press firmly into the pelvis

    a. 1, 2
    b. 1, 2, 3
    c. 1, 3
    d. 1, 4
    e. 2

41. Artificial rupture of the membrane by the doctor is called:

    a. para cervical
    b. pudendal
    c. amniotomy
    d. episiotomy

42. What type of anesthesia can be used for the episiotomy and repair of the perineum?

    a. epidural block
    b. pudendal block
    c. para cervical block
    d. spinal block

43. The mother's blood pressure must be taken frequently in:

    a. para cervical block
    b. epidural block
    c. pudendal block
    d. psychoprophylactic block

44. When checking fetal heart tones during fetal movement, the nurse can expect the FHT rate to:

    a. increase
    b. stop
    c. slow
    d. be irregular

45. A slow heart rate of less than 120 beats per minute is fetal:

    a. tachycardia
    b. acceleration
    c. cardiac arrest
    d. bradycardia

POST TEST - concluded

46. Deliveries in which forceps are applied after the baby's head is visible or almost visible are called:

    a. low forceps deliveries
    b. outlet forceps deliveries
    c. mid forceps delivery
    d. a, b

47. The first stage of labor for a primipara usually lasts:

    a. 3 to 6 hours
    b. 10 to 16 hours
    c. 6 to 10 hours
    d. 24 hours

48. A breech presentation in which the buttocks and the feet present and the legs are flexed is called a:

    a. complete breech
    b. footling breech
    c. frank breech
    d. all are correct

49. A general anesthesia used during delivery may have what kind of effect on the baby?

    1. respiratory depression
    2. vomiting with possible aspiration
    3. hypoxia
    4. excessive uterine bleeding

    a. all are correct
    b. 1, 2, 3
    c. 2, 3, 4
    d. 1, 3
    e. 2, 4

50. If the presenting part of the fetus is 2 cm. above the ischial spines, the presenting part is at:

    a. "O" station
    b. +2 station
    c. -3 station
    d. -2 station

ANSWERS TO POST TEST

Module B

1. a
2. d
3. e
4. c
5. d
6. b
7. c
8. b
9. d
10. c
11. d
12. c
13. d
14. a
15. b
16. d
17. d
18. c
19. c
20. a
21. d
22. a
23. c
24. d
25. b
26. c
27. d
28. c
29. b
30. d
31. a
32. b
33. b
34. d
35. a
36. e
37. d
38. d
39. c
40. d
41. c
42. c
43. b
44. a
45. d
46. d
47. b
48. b
49. d
50. d

unit 18

NURSING CARE OF MOTHERS AND NEWBORNS

Module C - Meeting the Patient's Needs During the Puerperium

RATIONALE

It is essential to know the physical and the emotional changes that take place in the patient during the six-week period immediately following delivery (puerperium or postpartum period). By knowing what changes to expect and why they occur, you will be able to more efficiently and effectively meet the patient's nursing needs.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Recognize normal physical, emotional and physiological changes that occur during the puerperium.
2. Recognize the nursing care given immediately postpartum and identify the principle related to the nursing care performed.
3. Identify words relating to puerperium.
4. Recognize problems that can occur during the puerperium and identify their symptoms, treatments and preventions.
5. Recognize the components of lactation and the drugs used to suppress lactation.
6. Identify the various methods of contraception and know the advantages and disadvantages of each.

CLINICAL OBJECTIVES

To the instructor's satisfaction, when given a clinical assignment, you will:

1. Identify the normal body changes during puerperium, describe and report your observations to the instructor or nurse in charge and construct nursing notes specific to the patient using the appropriate terminology.
2. Demonstrate and state the rules for the following:
    a. Checking breasts.
    b. Checking the rate of involution and charting it appropriately.
    c. Giving perineal care (peri care).
    d. Giving sitz baths.
    e. Applying medication to episiotomy.

CLINICAL OBJECTIVES - continued

   f. Giving peri-light treatments.

   g. Checking for urinary retention.

3. Demonstrate teaching a patient perineal care and breast care.

4. Demonstrate appropriate nursing care for a C-section patient and apply the rules to your nursing action as stated in your textbook.

LEARNING ACTIVITIES

Directions: All the information you need to complete this module is included in the textbook Introductory Maternity Nursing by Doris C. Bethea and in this module. The exercises in the module are included to help you to learn the information presented in the textbook. After you have completed each exercise, check your answers with the text. If you have any questions, go to your instructor.

ACTIVITY #1. Physiology of Puerperium

Directions: Read and study the following chart and diagram.

PHYSIOLOGY OF PUERPERIUM

ORGAN	CHANGES NOTED
Uterus	1. Contracts firmly and should remain contracted. 2. Involution begins immediately--fundus at the level of the umbilicus for two days and by the tenth day is once again a pelvic organ. 3. Reduces from two pounds to two ounces. 4. Endometrium--sloughs off as waste in lochia for ten days. It is restored to normal with the exception of the placental site, which becomes normal in eight weeks. a. Lochia Rubra: Red and bloody for two or three days postpartum. b. Lochia Serosa: Pink or brown in color for three or four days postpartum. c. Lochia Alba: Yellowish-white in color on the ninth or tenth day.
Cervix	1. Remains flabby for twenty to thirty minutes following delivery then begins to contract and will admit two fingers only. 2. The number of muscle cells in the cervix increases following delivery. 3. Menstruation resumes in six to eight weeks if the mother is not nursing the baby. If breast-feeding, probably will not resume until about two months after lactation ceases.
Vagina and Perineum	1. Never completely returns to its pre-pregnant conditions. 2. Hymen ring is perforated. 3. Labia majora and labia minora become flabby and atrophic compared with their condition before childbearing.
Breasts	1. Remain full if breast-feeding. Engorgement develops on the third day--lasts 24 to 36 hours. 2. First substance the breasts secrete is called colostrum. 3. Expulsion of milk is controlled by the let-down reflex, which is influenced by physical and emotional factors. 4. Return to normal gradually if not breast-feeding.

PHYSIOLOGY OF PUERPERIUM - continued

ORGAN		OTHER CHANGES NOTED
Abdominal Wall and Skin	1. 2.	Remains stretched. Stria (stretch marks) present, gradually become silvery in appearance but do not disappear completely.
Circulatory, Metabolic, and Urinary	1. 2. 3.	Marked increase in daily urinary output (diuresis) due to excess water retained during the pregnancy. Changes in metabolism at this time cause profuse perspiration (diaphoresis). Difficulty urinating—urethra swollen—loss of bladder tone.
Digestive System	1. 2.	Excessively thirsty immediately following delivery. Constipation—relaxation of abdominal wall and loss of intra-abdominal pressure.
Emotional	1. 2. 3.	Immediately following birth, very excited. "Postpartum blues" - on third day. Postpartum - "let-down" feeling.

Source: Meeks, Dorothy and Kalafatich, Audrey. Maternal and Child Health, Patterson, New Jersey: Littlefield, Adams, and Company, 1964.

Bethea, Doris C. Introductory Maternity Nursing, Philadelphia, PA: J.B. Lippincott Company, 1968.

LEARNING ACTIVITIES - continued

ACTIVITY #2. Normal Body Changes During the Puerperium

Directions: Read Chapter 13, pages 213-218, of Bethea. After you have read the chapter, define the terms 1-10, then complete the remaining exercise.

1. Puerperium (postpartum): ______________________________

2. Engorement: ______________________________

3. Prolactin: ______________________________

4. Colostrum: ______________________________

5. Lactation: ______________________________

6. Let-down reflex: ______________________________

7. Involution: ______________________________

8. Lochia: ______________________________

    a. Lochia rubra: ______________________________

    b. Lochia serosa: ______________________________

    c. Lochia alba: ______________________________

LEARNING ACTIVITIES - continued

9. After pains: ______________________________

10. "Postpartum blues": ______________________________

11. Discuss the changes in the breasts following delivery. ______________________________

12. List two essential components in lactation.

    a. ______________________________

    b. ______________________________

13. List four favorable factors that influence the let-down reflex. (Physical and emotional)

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

14. What is the composition of colostrum and how does it differ from breast milk?

LEARNING ACTIVITIES - continued

15. What does the height of the fundus indicate and how do you measure the height of the fundus?

16. List what lochia is composed of and the three changes that occur in the lochia as healing takes place.

17. What changes occur in the abdominal wall of the mother who has recently delivered?

18. What circulatory and metabolic changes occur in the mother who has recently delivered?

LEARNING ACTIVITIES - continued

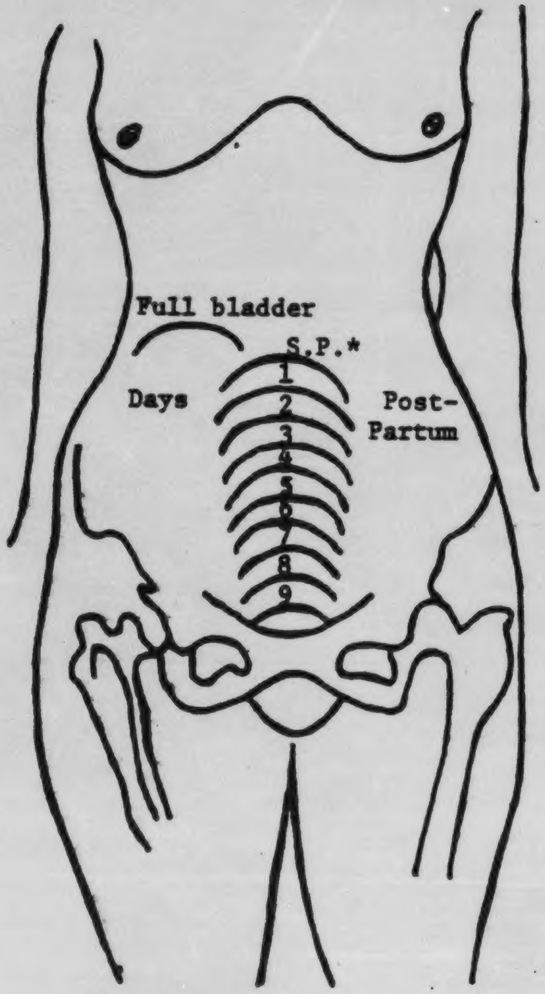
19. What changes occur in the urinary system of the mother who has recently delivered? Explain why these changes occur.

20. What changes occur in the digestive system? Explain why these changes occur.

21. List the postpartum physical care the mother should be given.

LEARNING ACTIVITIES - continued

Involution of the Uterus


Full bladder
S.P.*
Days
Post-
Partum
1
2
3
4
5
6
7
8
9

NOTE: Involution of the uterus showing the various positions of the fundus and supra pubic* level just after separation of the placenta from the uterine wall before its delivery.

LEARNING ACTIVITIES - continued

ACTIVITY #3. Nursing Care During the Puerperium

Directions: Read pages 219-243, Chapter 14, of Bethea. After you have read the chapter, define the terms 1-5, then complete the remaining exercise. You may use your textbook.

1. Hematoma: ______________________________

2. Stilbestrol: ______________________________

3. Deladumone: ______________________________

4. Rooming-in: ______________________________

5. Demand feeding: ______________________________

6. What are some of the possible causes for a mother to be chilly and somewhat shaky following delivery?

   ____

7. During the first hour following delivery, a mother should be carefully observed. List five things that should be checked and why you should check each.

   a. ______________________________

   b. ______________________________

LEARNING ACTIVITIES - continued

c. ______________________________

____

d. ______________________________

____

e. ______________________________

____

8. Daily postpartum care includes: ______________________________

____

____

____

____

9. Describe how to give peri care and state why it is important.

____

____

____

10. Name three analgesics a doctor may prescribe for postpartal discomforts.

a. ______________________________

b. ______________________________

c. ______________________________

11. Identify and discuss one way to provide family-centered maternity care.

____

____

____

LEARNING ACTIVITIES - continued

12. List six danger signs that could develop in the postpartum woman.

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

    e. ______________________________

    f. ______________________________

13. List ten methods of contraception and give a brief description of each.

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

    e. ______________________________

    f. ______________________________

    g. ______________________________

    h. ______________________________

    i. ______________________________

    j. ______________________________

ACTIVITY #4. Complications of Puerperium

Directions: Read and study the following material.

COMPLICATIONS OF PUERPERIUM

Complication: Postpartum Hemorrhage

DEFINITION	CAUSE	SIGNS AND SYMPTOMS	TREATMENT	NURSING CARE
Blood loss of 500 cc's or more.	Three Common Causes 1. Uterine atony-excessive stretching of uterine muscles. Example: large babies, twins, hydramnios, multigravida, uterine inertia, placenta previa, abruptio placentae. 2. Lacerations of the perineum, the vagina and cervix. Most likely to be present following a forceps delivery. 3. Retained pieces of placental tissue or membrane.	Symptoms of all 3 Causes 1. Excessive bleeding. 2. Pulse rapid and thready. 3. B/P drops. 4. Skin pale, cold and clammy. 5. Apprehensive. 6. Difficulty breathing due to air hunger.	Treatment for Cause No. 1: 1. Massage uterus until it is firm. 2. Compress uterus to expell all blood and clots. 3. Oxytoxics may be prescribed by the doctor. Treatment for Cause No. 2: 1. Lacerations must be repaired. Treatment for Cause No. 3: 1. D & C to remove the the retained pieces of placental tissue.	1. Notify doctor immediately if hemorrhage occurs. 2. Keep an accurate record of number of pads saturated in a given length of time. 3. Massage uterus if necessary; grasp firmly (avoid over-massage). 4. Explain to the patient reason for massaging the uterus. Example: expell clots, contract uterus. 5. Reassure patient and do not leave her. 6. Combat shock by elevating foot of the bed--keep patient warm. 7. Check vital signs frequently--q 5 to 15 minutes. 8. Give Ergotrate preparation as ordered.

Complication: Puerperal Infection

DEFINITION	CAUSE	SIGNS AND SYMPTOMS	TREATMENT	NURSING CARE
The invasion of the reproductive tract by pathogenic organisms following delivery: (a) localized infected stitch in episiotomy. (b) generalized septicemia (organisms invade bloodstream) EXAMPLES: endometritis: inflammation of lining of uterus. parametritis: connective tissue around uterus infected.	1. Most by streptococcus, some by staphlococcus, colon bacillus and gonococcus. 2. May be transferred to mother by hands of the nurse or doctor. 3. Spread by contaminated gloves or instruments. 4. Spread of organisms from nasopharynx of doctors, nurses with U.R.I. infections.	Depends on area involved. Usually: 1. Elevated temperature. 2. Rapid pulse. 3. Chills. 4. Headache. 5. General feeling of tiredness and listlessness. 6. Pain and tenderness in area involved. (With endometritis, there is an increased amount of lochia with a foul odor.) REMEMBER: A temperature of 100.4° F. (38°C) or higher on two consecutive days during the first 10 days after delivery, excluding the first 24 hours indicates puerperal infection.	1. Culture to determine organism (cause). 2. Doctor prescribes antibiotic. 3. Rest. 4. Increased fluid intake (F.F.). 5. High calorie, high vitamin diet to build up resistance. 6. Analgesics. 7. For endometritis, possibly the doctor will prescribe Ergotrate to keep uterus contracted and thus prevent spread of infection to surrounding area. 8. Elevate head of bed.	1. Help make her comfortable. 2. Conserve patient's strength. 3. Force fluids. 4. Encourage eating. PREVENTION: 1. Prenatal care. 2. Handwashing. 3. Strict asepsis in delivery room. 4. Masks during the delivery. 5. Health teaching at all times. 6. Perineal hygiene: When cleansing perineal area, wash from front to back. (urinary meatus to rectum and dispose). 7. Isolate mother with infection.

DEFINITION	CAUSE	SIGNS AND SYMPTOMS	TREATMENT	NURSING CARE
Thrombophlebitis: inflammation of pelvic or of femoral veins.			9. In femoral thrombophlebitis: a. Elevate feet and legs 30-45°. b. Apply moist or dry heat to decrease size of thrombus. c. Do not massage affected leg. d. Anticoagulants prescribed to prevent formation of thrombi; observe for signs and symptoms.	

Complication: Puerperal Infection - continued

DEFINITION	CAUSE	SIGNS AND SYMPTOMS	TREATMENT	NURSING CARE
Mastitis: Inflammation of the breast.	1. Most commonly caused by staphylococcus aureus, but may also be due to hemolytic streptococcus. 2. May be carried to the breast on the hands of the mother or on the hands of the nurse who examines the breast. 3. Infected baby may carry it to the mother. 4. Cracks on nipples.	1. Chills. 2. Fever. 3. Pain and tenderness. 4. Inflammation. 5. Feels hard to touch.	1. Antibiotics. 2. Baby put on formula (temporarily or permanently).	1. Enforce good breast hygiene. 2. Bedrest. 3. Ice bags to the affected breast. Breast binder — well-fitted bra. PREVENTION: 1. Mother and nurse wash well with soap and water before touching breast. 2. Treat first sign of cracked nipples.
Cystitis: Inflammation of the bladder.	1. Bacteria caused by: (a) bladder becoming overly distended. (b) bladder not emptied completely on urination. (c) lapse in aseptic technique.	1. Painful urination. 2. Frequent urination. 3. Chills. 4. Fever. 5. Feeling of not emptying bladder. 6. Pain in the lower abdomen.	1. Urine culture. 2. Antibiotics. 3. Indwelling catheter may be ordered.	1. Force fluids. 2. Instruct in good peri care. 3. Bedrest (rest).

Complication: Puerperal Infection - continued

DEFINITION	CAUSE	SIGNS AND SYMPTOMS	TREATMENT	NURSING CARE
Pulmonary Embolism: Blood flow to the lung is partially or completely blocked by a part of a thrombosis that has broken loose and been carried along the blood stream to the right side of the heart where it occludes the pulmonary artery.	1. May originate in a uterine or a pelvic vein. 2. May occur following infection, thrombosis or severe hemorrhage or shock.	1. Sudden severe pain over heart. 2. Severe difficulty in breathing. 3. Extreme apprehensive syncope, pallor or cyanosis and an irregular, feeble or imperceptible pulse. 4. If the clot completely occludes the pulmonary artery, the symptom may consist of a sudden outcry followed by coma and death.	1. Combat anoxia and shock. 2. Pevent movement that could result in death. 3. Medicate as needed. 4. Anticoagulant therapy.	1. Oxygen immediately. 2. Keep patient quiet, on back. 3. Relieve apprehension and pain. 4. Maintain bedrest. 5. Keep warm and as comfortable as possible.

Complication: Puerperal Infection - continued

DEFINITION	CAUSE	SIGNS AND SYMPTOMS	TREATMENT	NURSING CARE
Postpartum Psychosis: The woman's ability to cope is lessened and her anxiety and depression may so increase that a postpartum psychosis results.	1. Mental health and physical and emotional reserve are poor. 2. Inadequate support from friends, husband and relatives. 3. Unable to make adjustment to new responsibilites.	1. Lack of support from partner and significant others. 2. Conflicts between own desire and expectation of others. 3. Unsure of ability to provide care for infant. 4. Failure of the birth of the infant to reestablish a desired relationship with her partner.	1. Replenish depleted energy supply. 2. Support.	1. Provide uninterrupted rest periods. 2. Control visitors to eliminate fatigue. 3. Constant support. 4. Education in infant care.

LEARNING ACTIVITIES - continued

ACTIVITY #5. Problems During the Puerperium

Directions: Read pages 244-252, Chapter 15, of Bethea. After you have read the chapter, define the terms 1-8, then complete the remaining exercise.

1. Postpartum hemorrhage: ______

2. Puerperal infection: ______

3. Septicemia: ______

4. Endometritis: ______

5. Parametritis: ______

6. Thrombophlebitis: ______

7. Mastitis: ______

8. Cystitis: ______

9. List the three main causes of postpartum hemorrhage and discuss the treatment for each.

   a. ______

   b. ______

   c. ______

LEARNING ACTIVITIES - continued

10. List the symptoms of postpartum hemorrhage.

    a. ____________________

    b. ____________________

    c. ____________________

    d. ____________________

    e. ____________________

    f. ____________________

    g. ____________________

11. Discuss three ways puerperal infection can be prevented.

    a. ____________________

    ____

    b. ____________________

    ____

    c. ____________________

    ____

12. List the symptoms of puerperal infection.

    a. ____________________

    b. ____________________

    c. ____________________

    d. ____________________

    e. ____________________

    f. ____________________

LEARNING ACTIVITIES - continued

13. Discuss the symptoms and treatment for mastitis.

14. Discuss the symptoms and treatment for cystitis.

ACTIVITY #6. Methods of Contraception

Directions: Read and study the following information on methods of contraception and be sure you know the advantages and disadvantages of each method.

METHOD OR DEVICE	DESCRIPTION	ACTION AND LIMITATIONS	CONTRAINDICATIONS, SIDE EFFECTS, AND ADVERSE EFFECTS
Contraception			
The Pill	Oral tablet containing hormones (estrogen, progestin) taken as directed.	Action: supresses ovulation; stimulates growth of endometrium.	Contraindications: family history of breast or cervical cancer, diabetes; personal history of circulatory problems. Adverse effects: blood and circulatory problems such as thromophlebitis. Side effects: Nausea, weight gain, headaches, depression, spotting, edema.
Intrauterine Device (IUD)	Small object in shape of ring, loop, coil or bow made of plastic or stainless steel. It is inserted in the uterus by a physician.	Action: action not completely known; disturbs uterine motility.	Contraindications: spontaneous expulsion; insertion difficult in nulliparas. Adverse effects: uterine perforation, pelvic inflammatory disease (PID). Side effects: pain, bleeding, vaginal discharge.
Diaphragm/ Jelly	Occlusive vaginal diaphragm made of rubber used with spermicidal jelly.	Action: immobilizes and kills sperm; provides mechanical barrier. Limitations: possibility of displacement during intercourse; poor fit reduces effectiveness.	None.

METHOD OR DEVICE	DESCRIPTION	ACTION AND LIMITATIONS	CONTRAINDICATIONS, SIDE EFFECTS, AND ADVERSE EFFECTS
Contraception			
Condom	Thin sheath made of rubber or similar material placed over penis before intercourse.	Action: prevents sperm from entering vagina. Limitations: may tear or slip off during intercourse. Lessens sexual pleasure.	None
Spermicidal Foams	Chemical products inserted in vagina with applicator.	Action: coats vaginal walls and cervix; provides mechanical barrier; spermicide. Limitation: not reliable.	None.
Rhythm	Woman takes temperature every morning before getting out of bed to establish pattern of ovulation. Temperature rises 3 successive days after ovulation.	Action: avoids conception by abstaining from intercourse for 3 days before and after estimated date of ovulation. Limitation: restricts marital relations.	Contraindications: Irregular menstrual cycle.
Coitus Interruptus	Withdrawal of the penis from vagina before sperm deposited.	Action: avoids sperm being deposited in vagina. Limitation: requires concentration and will power. Unreliable as sperm may escape prior to orgasm.	None.

METHOD OR DEVICE	DESCRIPTION	ACTION AND LIMITATIONS	CONTRAINDICATIONS, SIDE EFFECTS, AND ADVERSE EFFECTS
Sterilization			
Female:			
Hysterectomy	Surgical procedure.	Excision of uterus.	None.
Tubal Ligation	Surgical procedure.	Fallopian tubes tied and severed either by laparoscopy or 3 to 4-inch incision in lower abdomen.	None.
Male:			
Vasectomy	Surgical procedure.	1/2-inch incision on each side of scrotum; vas deferens cut and tied.	None.

LEARNING ACTIVITIES - concluded

Another method of natural family planning is described below.*

Two Australian doctors, named Evelyn and John Billings have developed a method of evaluating the vaginal discharge quality on a daily basis to determine whether it is safe or unsafe for unprotected intercourse.

The vaginal discharge changes consistency (tacky - stringy - clear - etc.) at different points in the menstrual cycle. Mucus starts out whitish or cloudy and tacky. It increases and becomes clearer until one or two peak days when the mucus is clear, slippery, stringy, resembling raw egg white. At this time, it will actually form a string when put between your two fingers. There is also a definite sensation of vaginal lubrication or wetness. Within 24 hours after the last peak day ends, ovulation will occur. From the first sign of mucus until the fourth day after the peak symptom, the woman is fertile and must avoid unprotected intercourse. This is also the time when the basal body temperature dips and then rises.

Unprotected intercourse can take place from the fourth day after peak until menstruation (about 10 days in a 28-day cycle are infertile). If mucus is present, it will be cloudy or white. This infertile interval corresponds to days of higher basal body temperature.

The slight temperature changes in a woman's body around the time of ovulation are also important. About 1 to 1 1/2 days prior to ovulation the temperature may drop 0.2° to 0.3° and then rise 0.7° to 0.8° 1 to 2 days after ovulation because of the ovaries' secretion of progesterone. A woman can determine when she ovulates by taking her temperature with a basal body temperature thermometer (calibrated in tenths of a degree) when awaking each morning and recording it on a chart. The fertile period extends from 1 to 2 days before ovulation to 2 days after ovulation.

Combining the use of the basal body temperature chart and observation of cervical mucus changes can provide a method of natural family planning.

*It is being taught to women who will not or cannot use artificial means of contraception.

NURSING CARE OF MOTHERS AND NEWBORNS

Module D - Evaluating the Fetal Condition

unit 18

RATIONALE

In order to evaluate the well-being of the fetus, it is necessary to have an understanding of methods used for evaluation.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Recognize methods useful in evaluating fetal condition during pregnancy and during labor.
2. Recognize the dangers involved in performing the evaluation tests.
3. Recognize the necessary criteria to perform the evaluation tests.
4. Identify the signs of fetal distress.

LEARNING ACTIVITIES

Directions: All the information you need to complete this module is included in the textbook Introductory Maternity Nursing by Doris C. Bethea and this module. The exercises in the module are included to help you to learn the information presented in the textbook. After you have completed each exercise, go back and check your answers with the textbook. If you have any questions, go to your instructor.

ACTIVITY #1. Methods of Evaluating Fetal Condition During Pregnancy and Labor

Directions: Read Chapter 16, pages 253-276, of Bethea. After you have read the chapter, complete the following exercises.

Define the following terms:

1. Amniocentesis: ______________________________

____

2. Estriol levels: ______________________________

____

LEARNING ACTIVITIES - continued

3. Lecithin: ______________________________

____

4. Sphingomyelin: ______________________________

____

5. Doppler probe: ______________________________

____

6. Fetal electrocardiograph: ______________________________

____

7. Oxytocin challenge test (OCT): ______________________________

____

8. Fetal activity test (FAT): ______________________________

____

9. Ultrasound scanning: ______________________________

____

10. List three methods used to evaluate the fetus during pregnancy.

 a. ______________________________

 b. ______________________________

 c. ______________________________

11. List three possible dangers that could occur when an amniocentesis is performed.

 a. ______________________________

 b. ______________________________

 c. ______________________________

LEARNING ACTIVITIES - continued

12. List and briefly describe five characteristics of the fluid from an amniocentesis.

a. ______________________________

____

b. ______________________________

____

c. ______________________________

____

d. ______________________________

____

e. ______________________________

____

13. Write a brief description of the lecithin-sphingomyelin ratio and explain its importance to the fetus.

____

____

____

14. Discuss the significance of estriol levels during pregnancy.

____

____

____

15. List three examples of cases in which the estriol levels are of greatest significance?

a. ______________________________

b. ______________________________

c. ______________________________

LEARNING ACTIVITIES - continued

16. Discuss how x-rays can be helpful in evaluating the condition of the fetus.

17. Discuss the reason a full bladder is necessary prior to a sonogram.

18. What is the oxytocin challenge test and why is it used?

19. On what basis is an OCT interpreted as being negative or positive?

20. Discuss the fetal activity test (FAT).

21. List two methods used to evaluate fetal condition during labor.

   a. ____________________

   b. ____________________

LEARNING ACTIVITIES - continued

22. Signs of fetal distress that may be detected during fetal monitoring include:

a. ______

b. ______

c. ______

23. List three instruments for monitoring fetal heart rate.

a. ______

b. ______

c. ______

24. Discuss the advantages and the disadvantages of each of the three instruments listed in the previous question.

______

______

______

______

______

25. What are the indications for fetal monitoring?

a. ______

b. ______

c. ______

d. ______

e. ______

f. ______

g. ______

LEARNING ACTIVITIES - concluded

26. What data are obtained by fetal monitoring?

a. ____________________

b. ____________________

c. ____________________

d. ____________________

e. ____________________

f. ____________________

g. ____________________

27. Discuss the value of fetal blood studies.

____

____

____

28. Briefly explain why fetal blood studies are not always possible to obtain.

____

____

POST TEST

Modules C and D

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

SITUATION:

This is Mrs. Thomas' second day on postpartum. She had an 8 lb. 6 oz. baby girl. She is breast-feeding her baby. The delivery went very well with a midline episiotomy. Mrs. Thomas' fundus is firm and right below the umbilicus. Her lochia is foul smelling and quite heavy. Mrs. Thomas has a 101 temperature this morning and is complaining of feeling extra tired. She also has a headache.

1. During the puerperium the first sign of infection is most frequently detected by an increase in:

   a. pulse rate
   b. temperature
   c. lochia discharge
   d. blood pressure

2. Mrs. Thomas might be suffering from what specific problem?

   a. septicemia
   b. thrombophlebitis
   c. endometritis
   d. pelvic inflammatory disease

3. Which drug groups would not be prescribed by the doctor in the treatment of puerperal infection?

   a. anticoagulants
   b. sulfa drugs
   c. antibiotics
   d. oxytocics

4. What nursing action should be taken to promote drainage from the uterus?

   a. strict bed rest
   b. elevate the head of the bed
   c. elevate the foot of the bed
   d. continuous ambulation

POST TEST - continued

5. Since Mrs. Thomas shares a room with three other mothers, it would be important to:

   a. keep her on strict bed rest
   b. provide separate bathroom facilities
   c. preferably transfer her to a private room
   d. transfer her to a two-bed unit

6. Which is NOT a symptom of localized pelvic infection?

   a. fever
   b. rapid pulse
   c. pain and tenderness in the pelvic region
   d. normal lochia

SITUATION:

Mrs. Zee delivered an 8 lb. 5 oz. baby girl yesterday and today is her first post-partum day. She had a midline episiotomy with a second degree laceration. She used an I.U.D. before pregnancy.

The following questions relate to the above situation.

7. The type of lochia you would expect Mrs. Zee to have would be:

   a. scant to moderate alba
   b. scant to moderate serosa
   c. scant to moderate rubra

8. The postpartum uterus must be watched very closely because of the danger of postpartum hemorrhage. The patient most likely to have it is:

   a. a primipara
   b. a multipara
   c. a woman who has just delivered a low birth weight infant
   d. a woman who has delivered twins

9. Some women who try I.U.D.'s cannot use them satisfactory because of:

   1. expulsion
   2. bleeding
   3. discomfort

   a. 2
   b. all are correct
   c. 1
   d. 1, 2
   e. 2, 3

POST TEST - continued

10. It is important to observe and to describe Mrs. Zee's lochia following delivery because:

    a. a foul odor indicates that an infection is present
    b. the doctor needs to determine the condition of the perineum
    c. a release from the hospital depends on the status of the lochia
    d. it is important to evaluate if involution is occurring

11. The nurse would expect Mrs. Zee's fundus to be ____ on the first postpartum day.

    a. well contracted with its upper border not above the level of the umbilicus
    b. well contracted with its upper border 3 to 4 finger breaths below the umbilicus
    c. relaxed with its upper border level with the umbilicus
    d. relaxed with its upper border 2 to 3 finger breaths below the umbilicus

12. On the third or fourth day postpartum, the lochia decreases in amount and is called:

    a. lochia serosa
    b. lochia rubra
    c. lochia alba
    d. lochia decidua

SITUATION

Mrs. Paz delivered on Friday at 1500. On Saturday morning at 0400, Mrs. Paz still had not voided and was complaining of pain over the bladder region. On catheterization, 1,800 cc's of urine was obtained and Mrs. Paz' temperature was 100.4.

13. The physiology of the situation just described is:

    1. common due to loss of bladder tone
    2. common due to edema of the perineum
    3. always indicative of beginning bladder infection
    4. abnormal

    a. 1, 2
    b. 1, 2, 3
    c. 1, 3
    d. 2, 3, 4

14. The normal urinary output after delivery would be:

    a. concentrated
    b. decreased
    c. doubled
    d. increased

POST TEST - continued

15. What might be the result if Mrs. Paz's bladder was allowed to stay distended?

    a. take longer to regain tone
    b. more easily infected
    c. renal failure
    d. a, b
    e. a, c

16. A rise in Mrs. Paz's temperature during the first 24 hours is probably due to:

    a. dehydration
    b. infection
    c. cystitis
    d. endometritis

17. On Mrs. Paz's third day postpartum, her temperature persisted at 101. You would suspect Mrs. Paz has:

    a. cystitis
    b. beginning lactation
    c. endometritis
    d. parametritis

18. The above type of infection (answer to question #17) can be caused by:

    a. physiological response to beginning lactation
    b. prolonged labor and early rupture of bags of water
    c. early rupture of the bag of water and lapse in aseptic technique
    d. allowing a bladder to become overly distended or not completely emptied or a lapse in aseptic technique

SITUATION

Mrs. Tim has just delivered a 6 lb. 4 oz. baby boy. She has been transported from the delivery room to the recovery room. Mrs. Tim's fundus is firm, BP is 130/70, and she is shaky and complains of feeling chilly.

19. The chilly feeling and shaking that Mrs. Tim is experiencing are probably due to:

    1. the exact cause is unknown
    2. rapid cooling following increased perspiration with labor
    3. sudden weight loss after the baby is born
    4. nervousness and exhaustion

    a. 1, 2, 3
    b. 3, 2, 4
    c. 1, 2, 4
    d. all are correct

POST TEST - continued

20. What are the most common hazards for the mother following the third stage of labor?

    1. urinary retention
    2. shock
    3. hemorrhage
    4. infection

    a. 3
    b. 1, 2, 3
    c. 2, 3
    d. 2, 3, 4

21. Mrs. Tim lost approximately 200 cc's during delivery. If blood loss reaches ____ cc's, it is considered hemorrhage.

    a. 200
    b. 300
    c. 400
    d. 500

22. Mrs. Tim's uterus is somewhat soft and boggy. A relaxed uterus that is soft and boggy and is difficult to feel can be stimulated to contract by:

    a. massaging the fundus continuously
    b. having the patient massage her uterus intermittently
    c. massaging the fundus with both hands
    d. massaging the fundus only till firm

23. The outstanding symptoms of postpartum hemorrhage Mrs. Tim would display are:

    1. drop in blood pressure
    2. excessive bleeding
    3. soaking peri pads
    4. rapid pulse

    a. 1, 2, 4
    b. all are correct
    c. 2, 3, 4
    d. 1, 3, 4

24. When postpartum hemorrhage is corrected with dilation and curettage, hemorrhage was probably due to:

    a. perineal laceration
    b. cervical laceration
    c. retained pieces of placenta
    d. ictopic pregnancy tissue

POST TEST - continued

SITUATION:

Mrs. Jones gave birth to a baby girl on Saturday. On Sunday, she attempted to nurse for the first time. She did fair. By Monday, both she and the baby were learning what nursing was all about.

The following questions relate to the above situation.

25. The colostrum that Mrs. Jones' newborn infant obtains from her breast:

    a. is a form of milk
    b. has all the nourishment of milk
    c. is of the same composition as milk
    d. is a secretion before true lactation

26. Prolactin is what type of hormone?

    a. ovulation inhibitor
    b. ovulation stimulant
    c. lactation stimulant
    d. lactation suppressant

27. Late Tuesday evening, Mrs. Jones was complaining of her breasts feeling full. Engorgement of the breasts becomes softer and more comfortable in ___ hours.

    a. 21 to 24
    b. 24 to 36
    c. 36 to 48
    d. 48 to 72

28. The period during which the postpartum mother's breasts are full and preparing for lactation is known as:

    a. involution
    b. engorgement
    c. lactation
    d. mastitis

29. As Mrs. Jones is breast-feeding her baby, she asks the nurse why the baby seems less interested. While talking with Mrs. Jones, the nurse finds out that Mrs. Jones has been fighting with her husband. The nurse explains to Mrs. Jones that relaxation is essential in breast-feedings because expulsion of milk does not occur unless the mother is relaxed. What reflex controls the expulsion of milk?

    a. expulsion reflex
    b. sucking reflex
    c. let-down reflex
    d. relaxation reflex

POST TEST - continued

30. Mastitis can occur if:

    1. breasts are not kept dry and clean
    2. the examiner has contaminated hands
    3. the infant has an oral infection

    a. 1
    b. all are correct
    c. 3
    d. 1, 2

31. The organism that causes the infectious process in the breast can easily enter the breast through the:

    a. areola
    b. nipple
    c. lactiferous glands
    d. alveolus glands

32. Which contraceptives require consultation with a physician?

    a. diaphragm
    b. coitus interruptus
    c. vaginal foam
    d. condom

33. Deladumone could be given to Mrs. Jones to:

    a. contract the uterus
    b. suppress lactation
    c. suppress ovulation
    d. stimulate lactation

SITUATION:

Mrs. Ortega delivered a baby boy about six days ago. Normally, a postpartum mother should be home by now, but Mrs. Ortega developed an infection in the lining of the uterus and had to stay a few extra days.

The following questions relate to the above situation.

34. When the lining of the uterus became infected, Mrs. Ortega developed which condition?

    a. endometritis
    b. pelvic inflammatory disease
    c. parametritis
    d. thrombophlebitis

POST TEST - continued

35. Puerperal infection is:

    1. any infection affecting a part of the reproductive system
    2. rise in temperature, edema and tenderness of affected part
    3. frequency of urination with pain and pus in the urine
    4. pain in the affected breast

    a. 1, 2, 4
    b. 1, 2
    c. 1, 2, 3
    d. 1

36. To prevent puerperal infection, one can:

    1. do frequent peri-care
    2. put pad on from front to back
    3. do careful handwashing
    4. take antibiotics

    a. 1
    b. 1, 2
    c. 1, 2, 3
    d. 1, 3, 4
    e. all are correct

37. During Mrs. Ortega's hospitalization, her daily postpartum care included:

    1. observation to detect early signs of complications and determine the rate of involution
    2. measures to promote comfort and well-being of the mother
    3. protection of the infant from infection
    4. instruction and support to the mother to help her adjust to her role as a mother

    a. 2, 3, 4
    b. 1, 3, 4
    c. 1, 2, 3
    d. 1, 2, 4

38. The puerperium period is the ___-week period immediately following delivery:

    a. 2
    b. 4
    c. 6
    d. 8

POST TEST - continued

39. On Mrs. Ortega's seventh day, the doctor discharged her and instructed her to come for an examination six weeks from her delivery day. This exam is to:

    1. discuss family planning
    2. give her a pelvic examination
    3. give her a breast examination
    4. make arrangements for any corrective measures

    a. 1, 2, 3
    b. all are correct
    c. 1, 2, 4
    d. 1, 3, 4

Directions: Answer the following questions individually.

40. Uterine dysfunction is:

    1. normal uterine contraction without cervical dilation
    2. abnormal uterine contraction with cervical dilation
    3. no cervical dilation or effacement with painful contractions
    4. cervix dilated to 3 cm, contractions decrease and dilation stops

    a. 1, 2, 4
    b. 1, 3, 4
    c. 2, 4
    d. 3, 4
    e. 2, 3, 4

41. Afterpains are experienced:

    1. when the uterine muscles alternately relax and contract
    2. by the primapara
    3. by the multipara
    4. the first three to four days postpartum

    a. 2, 4
    b. 1, 3
    c. 1, 2, 4
    d. 1, 3, 4

POST TEST - continued

42. When caring for patients with thrombophlebitis:

    1. elevate feet 75°
    2. elevate feet 30° to 45°
    3. massage legs
    4. apply warm packs with no leg stimulation
    5. bed rest

    a. 2, 3, 4, 5
    b. 2, 4, 5
    c. 1, 4, 5
    d. 1, 3, 5

43. Involution occurs most rapidly in:

    a. the primipara
    b. the mother who nurses her baby
    c. the multipara
    d. the mother who ambulates early

44. Overmassaging of the uterus tends to:

    1. contract the uterus
    2. cause further relaxation
    3. increase blood loss
    4. should be avoided

    a. 1, 2, 4
    b. 2, 3, 4
    c. 1, 3, 4
    d. 1, 2, 3

45. A mother with thrombophlebitis should have her affected leg:

    a. massaged frequently
    b. dangling independently
    c. elevated

46. The use of effective contraceptives leads to:

    1. population growth control
    2. reduced anxiety over unwanted pregnancy
    3. family planning

    a. 1, 3
    b. all are correct
    c. 1
    d. 3
    e. 2, 3

POST TEST - continued

47. The returning of the uterus to its normal size and position following delivery is:

    a. evolution
    b. involution
    c. decidua separation intractable
    d. excavation

48. On the ninth or tenth day postpartum, the discharge is:

    a. lochia rubra
    b. lochia serosa
    c. lochia alba
    d. alba serosa

49. Methods used to evaluate the fetus during pregnancy are:

    1. amniocentesis
    2. estriol levels
    3. x-rays
    4. sonogram

    a. 1, 2, 3
    b. 2, 3, 4
    c. 1, 2, 4
    d. all are correct

50. The dangers associated with amniocentesis are:

    1. maternal hemorrhage
    2. fetal hemorrhage
    3. risk of infection
    4. rise in blood pressure

    a. 1, 2
    b. 2, 3
    c. 3, 4
    d. all are correct

51. A method(s) used to evaluate the fetal condition during labor is/are:

    a. fetal monitoring
    b. fetal blood studies
    c. P.K.U.
    d. a, b

POST TEST - concluded

52. In order to do blood studies on a fetus:

    a. the sample must be taken from the fetal scalp
    b. the membranes must be ruptured
    c. the cervix must be at least 3 to 4 cm. dilated
    d. all are correct

53. What is/are the sign(s) of fetal distress?

    a. meconium-stained amniotic fluid
    b. heart rate over 160 per minute
    c. heart rate below 120
    d. all are correct

ANSWERS TO POST TEST

Modules C and D

1. b
2. c
3. a
4. b
5. c
6. d
7. c
8. d
9. b
10. a
11. a
12. a
13. a
14. d
15. d
16. a
17. a
18. d
19. d
20. c
21. d
22. d
23. b
24. c
25. d
26. c
27. b
28. b
29. c
30. b
31. b
32. a
33. b
34. a
35. b
36. e
37. d
38. c
39. b
40. d
41. d
42. b
43. b
44. b
45. c
46. b
47. b
48. c
49. d
50. b
51. d
52. d
53. d

NURSING CARE OF MOTHERS AND NEWBORNS

Module E1 - General Characteristics, Appearance and Nursing Care of the Newborn

RATIONALE

In order to provide effective nursing care to the newborn immediately following delivery and daily, it is necessary to have a basic understanding of the newborn's characteristics and physiology.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Identify the appearance, behavior and characteristics of a newborn.
2. Identify the internal development and activity of each system of the newborn.
3. Identify the needs and care given to a newborn following delivery.
4. Identify the observations of a newborn during the first twelve hours following delivery.
5. Recognize the purpose of the apgar scoring system.
6. Recognize and identify all words listed in the vocabulary exercises in this module.

CLINICAL OBJECTIVES

To your instructor's satisfaction, when given a newborn as a patient assignment, you will:

1. Identify the characteristics of a newborn, describe and report your observations to the appropriate person, and construct nursing notes specific to the patient using the appropriate terminology.
2. Demonstrate the following nursing care and apply the rules as stated in your textbook:
    - A. Weighing the newborn
    - B. Bathing the newborn
    - C. Giving cord care
    - D. Giving meatal care on the uncircumcised newborn
    - E. Removing smegma from the fold of the labia
    - F. Taking vital signs (TPR's)
    - G. Caring for the circumcised newborn
    - H. Bottle-feeding the newborn
3. Observe the physician when a circumcision or physical examination is performed and explain the procedures to the baby's mother.
4. Identify the normal newborn's reflexes and describe their significance.

CLINICAL OBJECTIVES - continued

5. Observe the nursing care immediately after birth and describe your observations.
6. Demonstrate four measures taken in the nursery to prevent infections.
7. Assist mothers with breast-feeding and teach them how to meet other needs of their baby.

LEARNING ACTIVITIES

Directions: In Part I of Module E, you will learn how to actually give nursing care to the newborn. You will be able to participate in his/her daily life during the hospital stay and be involved in his/her adjustment to life outside the uterus. All the information you need to complete this module is included in the text Introductory Maternity Nursing by Doris C. Bethea and this module. The exercises in the module are included to help you to learn the information presented in the textbook. After you have completed each exercise, check your answers with the text. If you have any questions, ask your instructor to help you.

ACTIVITY #1. The Normal Newborn at Birth

Directions: Read Chapter 17, pages 277-285, of Bethea. Then complete the following exercises.

Define the following vocabulary words.

1. Vernix caseosa: ______________________________
____
2. Lanugo: ______________________________
____
3. Molding: ______________________________
____
4. Caput succedaneum: ______________________________
____
5. Cephalhematoma: ______________________________
____
6. Anterior fontanel: ______________________________
____

LEARNING ACTIVITIES - continued

7. Posterior fontanel: ______________________

____

8. Phimosis: ______________________

____

9. Circumcision: ______________________

____

10. Erythematous blotches: ______________________

____

11. Milia: ______________________

____

12. Icterus neonatorum (physiologic jaundice): ______________________

____

13. Meconium: ______________________

____

14. Physiologic weight loss: ______________________

____

15. Pseudomenstruation: ______________________

____

Complete the following exercise.

16. Identify the general appearance of a normal newborn's:

a. length ________ b. skin color ________ c. weight ________

d. cry ________ e. movement ________

17. Identify the specific characteristics of a normal newborn's:

a. head circumference ___________ b. eye color ___________

LEARNING ACTIVITIES - continued

18. Give a brief description of the appearance or the special features for the following terms.

    a. Lacrimal glands: ______________________________

    b. Fontanel (anterior and posterior): ______________________________

    c. Hearing: ______________________________

    d. Labia: ______________________________

    e. Abdomen: ______________________________

    f. Scrotum: ______________________________

    g. Arms and legs: ______________________________

    h. Mongolian spots: ______________________________

19. Describe the internal development of each system in the newborn.

    a. Respiratory System

       (1) Respiratory rate: ______________________________

       (2) Type of respiration: ______________________________

       (3) Rhythm of respiration: ______________________________

    b. Circulatory System

       (1) Pulse rate: ______________________________

       (2) Pulse rhythm: ______________________________

       (3) Clotting time: ______________________________

LEARNING ACTIVITIES - continued

c. Describe the temperature regulating mechanism of the newborn.

d. Gastrointestinal System

(1) Stomach capacity:

(2) Average number of stools per day:

(3) Color of first stool:

(4) List food groups newborns can and cannot digest.

(5) List special features the newborn is equipped with for sucking.

(6) Discuss why newborns are more likely to regurgitate.

(7) What type of vomiting should be reported to the doctor?

e. Genitourinary System

(1) Bladder capacity:

(2) Reddish or rusty color of newborn's urine is due to:

f. Nervous System

(1) List and describe the normal reflexes.

(a)

(b)

LEARNING ACTIVITIES - continued

(c) ____________________

(d) ____________________

(e) ____________________

(f) ____________________

(g) ____________________

(h) ____________________

(i) ____________________

(2) Absence of these reflexes may be an indication of ____________

or ____________.

ACTIVITY #2. Nursing Care of the Newborn

Directions: Read Chapter 18, pages 286-302, of Bethea. Complete the following exercise after you have read the chapter.

Define these terms.

1. Apgar: ____________________
2. Neonatal: ____________________
3. Bulb syringe: ____________________
4. Pathologic jaundice: ____________________
5. Demand feeding: ____________________
6. Terminal sterilization: ____________________

LEARNING ACTIVITIES - continued

7. Aseptic sterilization: ____________________

8. Discuss cold stress and its effect on the newborn.

9. Describe the methods used to identify the newborn following delivery.

10. Discuss parent-infant bonding.

11. What prophylactic measure is taken by the delivery R.N. to prevent blindness in the newborn?

12. List the immediate care given the newborn in the nursery. Give an explanation for each care.

    a. ____________________
    b. ____________________
    c. ____________________
    d. ____________________
    e. ____________________

13. List three ways to prevent infection in a newborn nursery.

    a. ____________________
    b. ____________________
    c. ____________________

LEARNING ACTIVITIES - continued

14. Daily care of the newborn should meet three needs. List them.

    a. ______________________________

    b. ______________________________

    c. ______________________________

15. Identify the physical needs of a newborn.

    ____

    ____

16. Briefly describe how to bathe a newborn, including circumcision and cord care.

    ____

    ____

    ____

17. Identify the emotional needs of a newborn.

    ____

    ____

18. Briefly state the instructions you would give a mother who is breast-feeding.

    ____

    ____

    ____

19. Briefly state the instructions you would give a mother who is formula-feeding.

    ____

    ____

    ____

LEARNING ACTIVITIES - continued

ACTIVITY #3. Newborn Physical

Directions: Read the following information before you observe a newborn physical performed by a physician.

1. Review the characteristics of the newborn: normal weight, length, crown-rump comparative figures.
2. Realize that the examiner has completed a scrub and washed with Phisohex before examining the child, that the table has been covered with sterile drapes, and that the examiner wears a suitable scrub gown while examining the infant.
3. Notice that the baby, who has recently been footprinted, still has ink on the soles of his/her feet.

VARIOUS PHYSICAL CHARACTERISTICS FOUND IN THE NORMAL NEONATE

AREA EXAMINED	FINDINGS
1. Overall view of neonate	A general observation of the baby can determine skin color, muscle tone, characteristic posture, movement or lack of movement, characteristic cry, amount of fatty padding, rashes, etc.
2. Examining the head	The head of the neonate is examined. The suture line, the posterior fontanel and the anterior fontanel are palpated. The ear level in relationship to the eye placement is noted. The examiner attempts to elicit the rooting and the sucking reflex. The baby usually prefers her own fist.
3. Characteristics of the skin	Milia may be found in the infant. A "flea bite dermititis" toxic erythema type of rash is seen widely spread over the body surfaces. The etiology of this rash is unknown and it disappears without treatment. The umbilical cord stump is inspected for degree of dryness, color and possible discharge.
4. Checking for wry neck and clavicle	A common birth injury involves a hematoma of the sternocleidomastoid muscle and may cause an infant to have "wry neck" (torticollis) if it goes undetected. The inspector palpates this muscle and the clavicle. The clavicle is the most commonly fractured bone in the infant.

LEARNING ACTIVITIES - continued

AREA EXAMINED	FINDINGS
5. Inspecting the chest	The breasts of the baby are palpated. Engorgement of the breast is normally found in the term infant. Characteristic breathing pattern is noted and the palmar grasp reflex checked.
6. The lower extremities and genitalia of neonate	The lower extremities are inspected as to shape and symmetry. The legs are abducted with the thighs flexed upon the abdomen. The external genitalia of the infant girl are observed to be bathed in a milky-white discharge. A small hemangioma is seen on the left buttock.
7. Posture of the abdomen	On her abdomen, the baby assumes a psuedo-crawling position moving all four extremities in a rather disjointed manner. Running a finger quickly down one side of the spine causes the infant to curve laterally in that direction.
8. Baby in prone position	With the infant on her abdomen, the examiner compares the length of both legs and checks the symmetry of the major gluteal folds in order to detect the presence of a congenitally dislocated hip.
9. "Walking" reflex	The examiner raises the baby to her feet and checks for the "stepping" or "walking" reflex. The baby begins by inhibiting her own stepping by placing one foot on top of the other holding the bottom foot down. There is a primitive walking attempt, however.
10. Placing reflex	Next, the baby's feet are held below the edge of the examining table. As her body is brought forward, the infant lifts first the left, then the right foot and places it on the table top. Again, the walking reflex is tested with a slight degree of success.
11. Startle (Moro) reflex	The examiner places the baby back on the table and tries to elicit the "startle" reflex. The doctor pounds twice on the table with some effect or he picks up the edge of the table and lets it drop approximately one inch. The baby responds with a clutching motion of her hands and arms. Next, the examiner lifts the infant slightly off the table utilizing the palmar grasp reflex and suddenly he lets the infant go. The baby responds with a fairly strong Moro reflex.

LEARNING ACTIVITIES - continued

ACTIVITY #4. Observing the Newborn

Directions:: In the clinical area, observe a newborn and complete the following form, writing your observations in the column at the right. After you have completed all your nursing observations, compare these observations with the descriptions given in the textbook Introductory Maternity Nursing.

OBSERVATION GUIDE SHEET-NEWBORN

POINTS TO BE NOTED	TEXTBOOK DESCRIPTION	INFANT OBSERVED
1. GENERAL APPEARANCE:		
A. length:		
B. weight:		
C. color:		
D. skin:		
E. cry:		
2. SPECIFIC CHARACTERISTICS:		
A. head circumference:		
B. shape of the head:		
C. frontanel, posterior:		
D. frontanel, anterior:		
E. eye color:		
F. abdomen:		
G. umbilical cord: (number of vessels)		
3. RESPIRATORY RATE:		
4. PULSE RATE (apical):		
5. TEMPERATURE:		
6. STOOLS (color, consistency):		
7. URINE (color):		
8. BABY'S "APGAR" AT BIRTH:		

LEARNING ACTIVITIES - continued

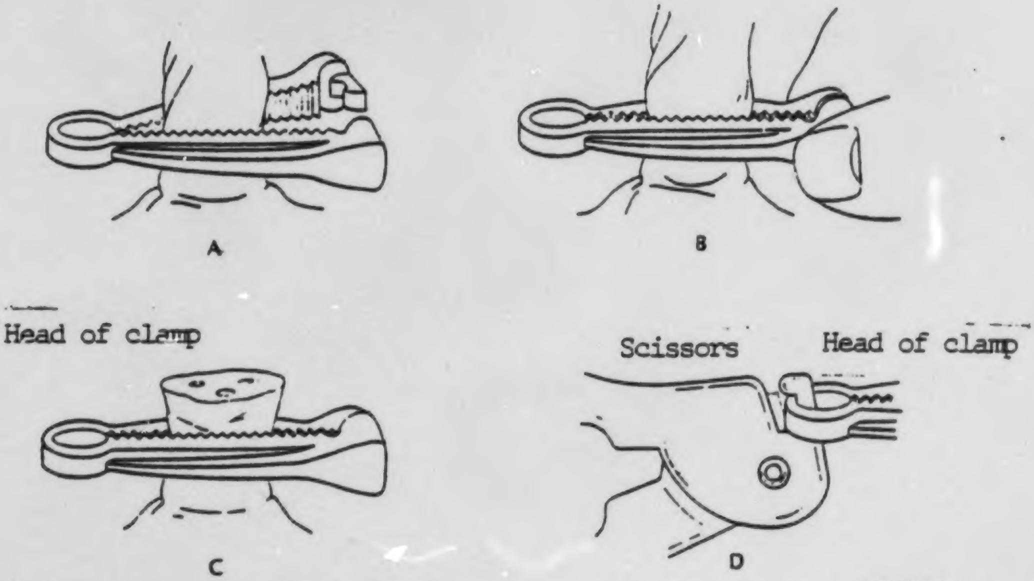
POINTS TO BE NOTED	TEXTBOOK DESCRIPTION	INFANT OBSERVED
9. NUTRITIONAL INTAKE: (type and quantity of formula)		
10. REFLEXES:		
A. rooting:		
B. sucking:		
C. swallowing:		
D. gagging:		
E. coughing:		
F. sneezing:		
G. grasping:		
H. startle (Moro):		
11. ANY ABNORMALITIES:		

LEARNING ACTIVITIES - continued

ACTIVITY #5. Hollister Cord Clamp

Directions: Study the following diagrams showing how to clamp the umbilical cord.

HOLLISTER CORD CLAMP

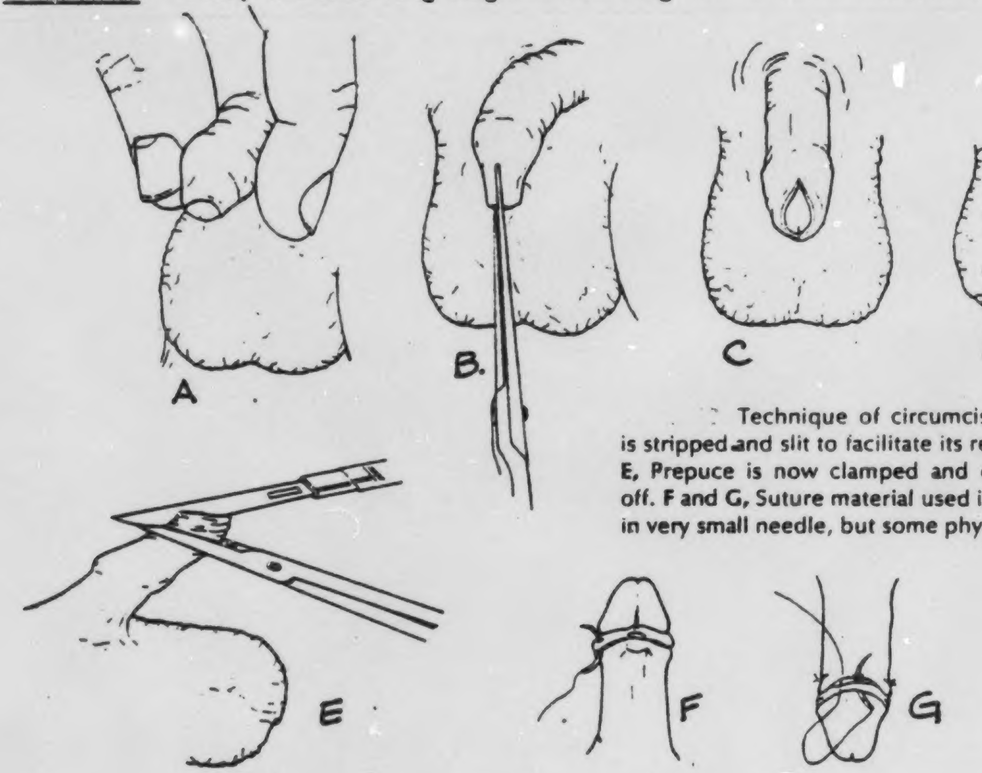

A
B
Head of clamp
Scissors
Head of clamp
C
D

Hollister cord clamp. A, Position clamp close to umbilicus. B, Secure cord. C, Cut cord. D, Remove clamp using scissors.

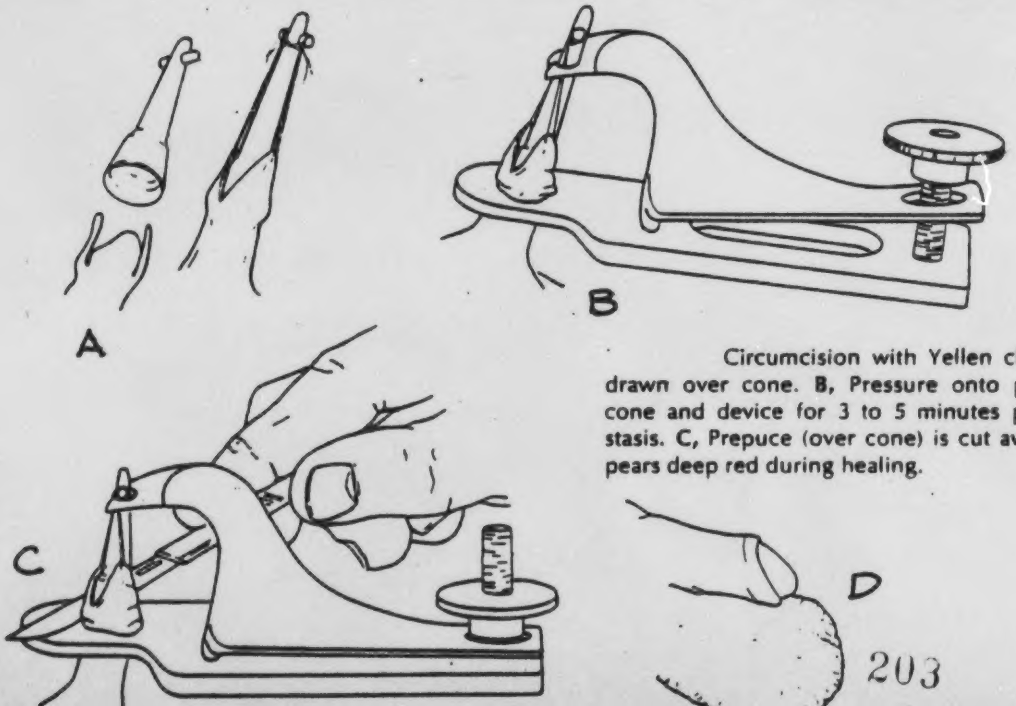
LEARNING ACTIVITIES - continued

ACTIVITY #6. Techniques of Circumcision

Directions: Study the following diagrams showing how to circumcise an infant.



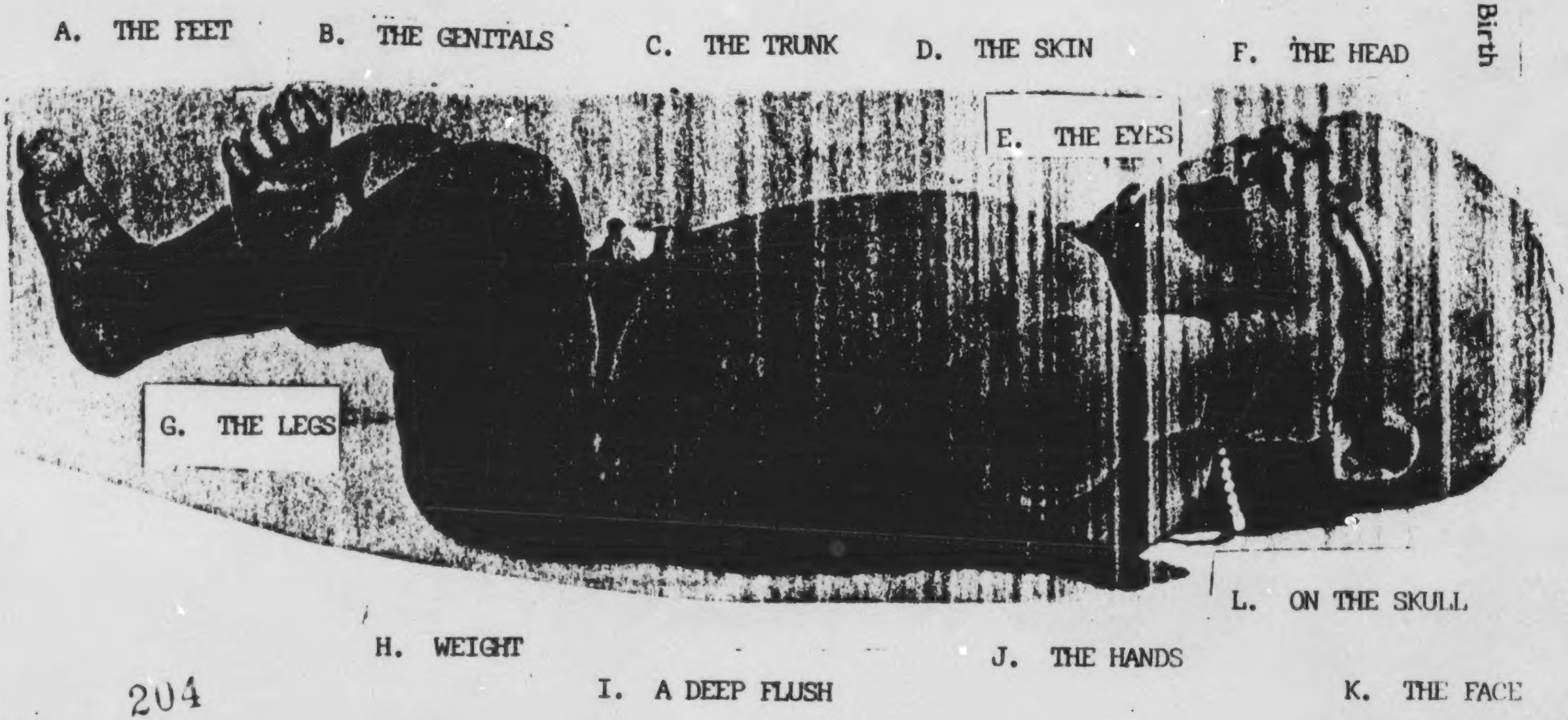
Technique of circumcision. A to D, Prepuce is stripped and slit to facilitate its retraction behind glans. E, Prepuce is now clamped and excessive prepuce cut off. F and G, Suture material used is plain 00 or 000 catgut in very small needle, but some physicians prefer silk.



Circumcision with Yellen clamp. A, Prepuce drawn over cone. B, Pressure onto prepuce between cone and device for 3 to 5 minutes produces homeostasis. C, Prepuce (over cone) is cut away. D, Glans appears deep red during healing.

WHAT A HEALTHY NEWBORN BABY LOOKS LIKE

Study the following picture and labels. On the following page are descriptions which correspond to each label.


A. THE FEET
B. THE GENITALS
C. THE TRUNK
D. THE SKIN
F. THE HEAD
E. THE EYES
G. THE LEGS
L. ON THE SKULL
H. WEIGHT
J. THE HANDS
I. A DEEP FLUSH
K. THE FACE

ACTIVITY #1. The Normal Newborn at Birth

Directions: Study the following

LEARNING ACTIVITIES - concluded

A. THE FEET look more complete than they are. X-ray would show only one real bone at the heel. Other bones are now cartilage. Skin often loose and wrinkly.

B. GENITALS of both sexes will seem large (especially scrotum) in comparison with the scale of, for example, the hands to adult size.

C. THE TRUNK may startle you in some normal detail: short neck, small sloping shoulders, swollen breasts, large rounded abdomen, umbilical stump (future navel), slender, narrow pelvis and hips.

D. THE SKIN is thin and dry. You may see veins through it. Fair skin may be rosy-red temporarily. Downy hair is not unusual. Some vernix caseosa (white, prenatal skin covering) remains.

E. EYES appear dark blue, have a blank stary gaze. You may catch one or both turning or turned to crossed or wall-eyed position. Lids, characteristically, puffy.

F. HEAD usually strikes you as being too big for the body. It may be temporarily out of shpae - lopsided or elongated - due to pressure before or during birth.

G. THE LEGS are most often seen drawn up against the abdomen in pre-birth position. Extended legs measure shorter than you'd expect compared to the arms. The knees stay slightly bent and legs are more or less bowed.

H. WEIGHT unless well above the average of 6 or 7 lbs. will not prepare you for how really tiny newborn is. Top to toe measure: anywhere between 18" to 21".

I. A DEEP FLUSH spreads over the entire body if baby cries hard. Veins on head swell and throb. You will notice no tears as tear ducts do not function as yet.

J. THE HANDS, if you open them out flat from their characteristics fist position, have: finely lined palms, tissue-paper thin nails, dry, loose fitting skin and deep bracelet creases at wrist.

K. THE FACE will disappoint you unless you expect to see: pudgy cheeks, a broad, flat nose with mere hint of a bridge, receding chin, undersized lower jaw.

L. ON THE SKULL you will see or feel the two most obvious soft spots or fontanels. One is above the brow, the other close to crown of head in back.

NURSING CARE OF MOTHERS AND NEWBORNS

Module E2 - Problems of the Newborn

unit 18

RATIONALE

Most pregnancies end happily with the birth of a healthy, normal infant. Occasionally, however, a problem(s) develops that results in death, threat or damage to the physical and/or mental health of the infant. The practical nurse serves an important function in giving support to parents whose newborn has a problem(s) and in caring for the newborn. In order to answer parents' questions intelligently and to provide effective care, a practical nurse needs basic knowledge about the newborn's potential problems.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Identify the various problem(s) of the newborn.
2. Identify the cause, symptoms and prevention (if any) of problems in a newborn.
3. In given situations identify the treatment and the nursing care of newborns with problems.
4. Recognize all words listed on the vocabulary exercises in this module.

CLINICAL OBJECTIVES

To the instructor's satisfaction, when given a newborn with a complication as a patient assignment, you will:

1. Identify the problem, describe and report your observations to the appropriate person and construct nursing notes specific to the newborn using the appropriate terminology.
2. Describe the cause, cure and treatment, and demonstrate the appropriate nursing care.

LEARNING ACTIVITIES

Directions: In this section, Part II, Problems of the Newborn, you will read your textbook Introductory Maternity Nursing by Doris C. Bethea and complete the exercises in this module. After you have completed each exercise, check your answers with the textbook. If you have any questions, go to your instructor for help.

ACTIVITY #1. Problems of the Newborn

Directions: Read and study the following information.

PROBLEMS OF THE NEWBORN

PROBLEMS AFFECTING RESPIRATION

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
Asphyxia neonatorum (if infant does not breathe 30-60 seconds after birth).	1. Asphyxia livida: a. deeply cyanotic b. responds readily to treatment. 2. Asphyxia pallida: a. pale color b. infant flabby c. cold skin d. respirations are irregular and weak. e. extreme shock	1. Anoxia due to prolapsed cord. 2. Injury to brain due to long and/or difficult labor or a difficult delivery. 3. Too much analgesia or anesthesia to the mother during labor and delivery (NARCOSIS). 4. Toxemia. 5. Placenta previa. 6. Abruptio placentae.	Clear air passage. Administer 0_2 Place head lower than body. Provide warmth.	1. Assist doctor with emergency. 2. Position. 3. Place in incubator. 4. Administer 0_2 as ordered. 5. Observe carefully for recurrent attacks. 6. Handle gently.
Respiratory distress syndome (hyaline membrane forms in lining of the alveoli of the lungs).	1. Rapid labored respirations. 2. Grunty respirations. 3. Flaring of nostrils. 4. Retracting of the chest walls. 5. Seesaw breathing. 6. Cyanotic.	Greatest incidence occur in: 1. Premature babies. 2. Babies of diabetic mothers. 3. Babies of mothers who experienced antepartal bleeding. 4. Babies born by cesarean section.	Place in incubator. Administer 0_2 Maintain humidity.	1. Observe carefully. 2. Report and record carefully. 3. Monitor vitals closely. 4. Change infant's position frequently. 5. Suction as necessary.

PROBLEMS OF THE NEWBORN

PROBLEMS AFFECTING RESPIRATION

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
Pneumonia	1. Pale or cyanotic. 2. Refuses to eat or eats poorly. 3. Respirations rapid. 4. Listless. 5. Temperature higher or lower than normal.	1. Bacteria entering the uterus during: a. prolonged labor. b. or following early rupture of the membranes. 2. Infant aspirating fluid: a. during birth. b. following a feeding. 3. Bacteria or virus coming in contact with the infant in the nursery.	1. Antibiotic for mother who has prematurely RBOW. 2. Prevent aspiration at birth of fluid. 3. Isolate infant. 4. Administer O_2 5. Antibiotics.	1. Observe carefully. 2. Lay infant on side after feeding.

PROBLEMS OF DEVELOPMENT AND HEREDITY

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
Congenital Heart Defect TYPE: (1) Patent doctus arteriosus (2) Patent foramen ovale	1. Rapid breathing. 2. Labored breathing. 3. Eats poorly. 4. Cyanotic or a grayish color.	1. Maternal disease during pregnancy. 2. Possibly hereditary.	Surgical repair (depends on the condition)	1. Precaution to prevent infection. 2. Prevent distress as much as possible for infant. 3. Supportive care to parents.

PROBLEMS OF THE NEWBORN

PROBLEMS OF DEVELOPMENT AND HEREDITY

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
Phocomelia (born without arms or legs)	Visible defect.	1. Taking drugs during pregnancy. (thalidomide) 2. Viral disease.	Fit with artificial limbs.	Supportive care to parents.
Cleft lip: (separation of the upper lip on one or both sides) **Cleft palate**: (separation down the middle of the roof of the mouth.)	1. Visible defect. 2. Failure to suck.	1. Hereditary in some cases. 2. No definite etiologic cause.	Surgery (when baby's condition permits, usually when a weight of 8 to 10 pounds is reached).	1. Preoperatively: (a) Feed artificially (eyedropper) (b) Hold in sitting position to feed. (c) Burp often. 2. Postoperatively: (a) Restrain hands. (b) Cleanse suture line with hydrogen peroxide.
Hydrocephalus (excessive amount of cerebrospinal fluid is generated in the ventricles of the brain)	1. Enlargement of the head. 2. Separation of the sutures.	1. Obstruction of the cerebrospinal fluid pathways. 2. Overproduction of cerebrospinal fluid due to a tumor or faulty absorption.	1. Shunt--not a cure--only to prevent further enlargement of the head.	1. Maintain nutrition. 2. Prevent infection. 3. Prevent skin breakdown. 4. Pick the child up for feeding-support head. 5. LOVING IS IMPORTANT.

PROBLEMS OF THE NEWBORN

PROBLEMS OF DEVELOPMENT AND HEREDITY

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
Spina bifida (defect of the spine) Myelomeningocele or meningomyelocele (nerve fibers as well as membrane protruding out onto back).	1. Visible defect. 2. Protruding tumor containing cerebrospinal fluid. 3. Tumor may rupture or ulceration may take place. 4. If the cord is involved in the cyst, urinary and bowel incontinence.	1. Lack of union between the laminae of the vertebrae.	Surgical correction.	1. Keep area clean. 2. Turn the child from side to side. 3. Handle gently. 4. Put diapers between legs.
Clubfoot (talipes) (Abnormal turning of one or both feet)	1. Adduction of forefoot or feet.	1. Hereditary factor. 2. Muscle imbalance. 3. Intrauterine position.	Passive correction. Application of plaster cast, braces or corrective shoes. Surgery (lenghtening achilles tendor, capsulotomy of ankle joint or release of medial structures).	1. If passive, exercise daily. 2. Shoes and cast need to be adjusted to allow for growth of child. 3. If in cast, check for circulation impairment. 4. Cleanse visible area such as toes and thighs.

PROBLEMS OF THE NEWBORN

PROBLEMS OF DEVELOPMENT AND HEREDITY

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
Tracheosophageal fistula (tube-like passage between the esophagus and the trachea.	1. Coughing 2. Gagging 3. Cyanosis 4. Expulsion of milk through the nose during feedings. 5. Excessive drooling.		Surgically corrected. Postop Parental fluid until able to take oral feedings. Antibiotics to prevent infection.	1. Frequent suctioning 2. Elevation of infant's head 30° or more to prevent aspiration. Postop 1. Place infant in incubator for warmth, humidity and oxygen. 2. Color and vital signs monitored closely. 3. Nasopharyngeal suctioning to maintain clear airway.

PROBLEMS OF THE NEWBORN

PROBLEMS OF DEVELOPMENT AND HEREDITY

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
Pyloric stenosis (pylorus is hypertrophied so that its opening is very narrow)	1. Forceful vomiting within 30 minutes after each feeding (projectile vomiting) 2. Visible peristaltic waves can be seen passing from left to right during and immediately following a feeding. 3. Hypertrophied pylorus palpated as a mass about the size of an olive in upper right quadrant.		Antispasmodic drugs, changes in the amount, frequency and thickness of feedings and changes in the infant's position following feeding. No improvement surgery. Pre-op Maintain hydration and electrolyte balance.	Postop Observe color. Monitor vitals. Record how feedings are tolerated. Parental support.

PROBLEMS OF THE NEWBORN

PROBLEMS OF DEVELOPMENT AND HEREDITY

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
Omphalocele (defect in which the peritoneal sac covered with amnion and filled with abdominal organs protrudes through the abdominal wall)	Visible defect.	Failure of the lateral fold of the abdomen to fuse by the tenth week of fetal life.	Immediate 1. Nasogastric suction to prevent distention. 2. Antibiotic therapy to protect against infection. Intravenous fluids to maintain hydration and electrolyte balance.	Immediate Care 1. Prevent rupture of the sac. 2. Prevent infection. 3. Cover with sterile towel saturated with normal saline. 4. Sterile gloves are worn to apply and change dressings. 5. Infant must be restrained. 6. Care taken with positioning and turning to prevent tension on the sac. 7. Incubator before and after surgery for warmth, humidity and oxygen. 8. Vitals monitored closely.

PROBLEMS OF THE NEWBORN

PROBLEMS OF DEVELOPMENT AND HEREDITY

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
Imperforate anus (no opening to the anus)	Not able to do rectal temperature. Absence of meconium stool. Later, abdominal distention.	The membrane that separates the rectum from the anus is normally absorbed during the eighth week of embryonic life. If it is not absorbed imperforate anus results.	Immediate correction by surgery.	To detect abnormality as early as possible. Postop Keep anal area dry and clean - no diaper. Nothing inserted into rectum. No tension on perineal suture (place on side not abdomen so infant can't pull legs under him). If colostomy done, keep area clean.
Cryptorchidism (undescended testes) A fistula between the rectum and the vagina, perineum or fourchet in the female or the urinary tract, scrotum or perineum in the male is likely to be formed.	Absence of one or both testes from scrotum.	Early in fetal life the testes develop in the abdomen below the kidneys. During the last two months of intrauterine life they descend into the scrotum.	Medical Gonadotropic hormone. Surgical Orchidopexy (when surgery is done varies: infancy, preschool, school age) Antibiotics after surgery to prevent infection.	Postop Restrain legs in straight position to keep continuous tension on traction suture. Ice pack as ordered to prevent swelling and discomfort. Prevent contamination of the suture line by carefully cleansing fecal material from the perineum.

PROBLEMS OF THE NEWBORN

PROBLEMS OF DEVELOPMENT AND HEREDITY

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
Epispadias (uretheral meatus located on the dorsal surface of the penis) and hypospadias (uretheral meatus located on the ventral surface of the penis or rarely in the female the urethra opens into the vagina.	Visible defect upon examination.	Congenital malformation in the urethera. Occurs in about 1 in 125 male infants. First degree relatives of children having hypospadias are five to ten times more likely to have hypospadias.	Surgery when patient is about two years of age.	1. Be sure the newborn is voiding. 2. Support to parents.
Birthmarks	Observable pigmented nevus or a vascular nevus (hemangioma)	Two types: a. vascular group due to hypertrophy of blood or lymph vessels. b. nonvascular nevi. Caused by an overgrowth of connective or epidermal tissue. Either type probably originates in the germ plasma. Hereditary factor is apparently important.	1. Cosmetic creams. 2. Surgery and irradiation sometimes used depending on type.	1. Acceptance of infant with disfiguring mark. 2. Help family to accept and love infant.

PROBLEMS OF THE NEWBORN

PROBLEMS OF DEVELOPMENT AND HEREDITY

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
Down's Syndrome (mongolism) (physical defects and severe mental retardation) TYPES: TRISOMY Trisomy of chromosome 21, which increases the chromosome count to 47 SECOND TYPE: Translocation of a chromosome count 46 --2 are misplaced. THIRD TYPE: Mosaicism (rare) Different number of chromosomes in some cells.	1. Slanting eyes. 2. Eyes close together. 3. Small head. 4. Thick neck. 5. Flat nose. 6. Large protruding tongue. 7. Short, thick hands. 8. Flabby skin. 9. Underdeveloped muscle. 10. Palpebral fissures (the openings between the eyelids) are narrow. 11. Brushfield's spots are present on the iris of each eye. 12. Prominent epicanthal folds over the eyes. 13. A simian line (a single palmar line that extends across the breadth of the palm).	1. Trisomy--older women and rarely familial (1 in every 600 births) 2. Translocation-younger women, is familial. 3. Mosaicism--not familial and fewer abnormalities occur.	Warmth. Prevent infection. 0_2 Fluid and electrolyte balance.	1. Provide emotional support to parents. 2. Administer 0_2.

PROBLEMS OF THE NEWBORN

PROBLEMS OF DEVELOPMENT AND HEREDITY

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
Phenylketonuria (PKU) (Body is unable to metabolize the protein phenylalanine)	No symptoms in infancy. (Symptoms only known if PKU test is done)	Hereditary metabolic disorder.	Restriction of phenylalanine intake.	1. Be sure PKU test is done prior to discharge on newborn. 2. Support for parents. 3. Make sure parents have a good understanding of the diet.

PROBLEMS INVOLVING THE BLOOD

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
"Rh" Incompatibility	1. Jaundice within few hours after birth. 2. Enlargement of liver and spleen. 3. Anemia. 4. Positive Coombs' test (infant's blood cells are coated with antibodies.)	1. Sensitized "Rh" negative mother by the "Rh" positive red cells of the fetus or occasionally by blood transfusing of "Rh" positive blood cells. 2. Production by the mother of an anti-"Rh" agglutinin. 3. Passage of substance across the placenta into the circulation of the infant. 4. Destruction of fetal erythrocytes due to specific reaction with anti-"Rh" agglutinin	Exchange transfusion.	1. Observe carefully. 2. Force fluids. 3. Keep infant under light at all times (protect eyes when under light).

PROBLEMS OF THE NEWBORN

PROBLEMS INVOLVING THE BLOOD

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
ABO incompatability Mother's blood type is 0 and the baby's is A or B, ABO incompatibility may develop.	1. Anemia at birth. 2. Jaundice within a few hours after birth. 3. First infant may be affected.	Break in the placental barrier permitting fetal red blood cells to enter into the maternal circulation.	Phototherapy.	1. Maintain phototherapy. 2. Push fluids. 3. Cover eyes when under lights.

PROBLEMS OF INFECTION

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
Impetigo	1. Pustular eruption on the skin (foul smelling cord). 2. Blister is easily ruptured and usually no crust formation. 3. Lesions tend to appear on moist or opposing surfaces of the skin (the groin, axilla, etc.)	Staphylococcal organisms may be brought to nursery through air in the nasopharynx of personnel or the nursery equipment.	1. Isolation. 2. Dryness. 3. Cleanliness. 4. Antisepsis. 5. Penicillin.	1. Isolation. 2. Prevent spread of infection. 3. Care of lesions. 4. Frequent bathing.

PROBLEMS OF THE NEWBORN

PROBLEMS OF INFECTION

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
Epidemic diarrhea	1. Frequent loose, green, watery stools. 2. Failure to nurse frequently. 3. Poor weight gain or weight loss. 4. Dehydrated.	1. E. Coli or other strains of organisms.	1. Isolation. 2. I.V. fluids (electrolytes nourishment)	1. Isolation. 2. Frequent diaper changes with careful cleansing. 3. Careful reporting.
Thrush	1. Curdlike patches resembling milk are found on the gums, palate, inside the cheek and on tongue. When rubbed off, they leave a raw, bleeding surface.	1. Candida albicans or other organisms from birth canal. 2. Secondary infection in nurseries from contaminated equipment.	1. Application of gentian violet or Nystatin.	1. Isolation. 2. Soak equipment in Zephiran and use autoclave. 3. Apply medications.
Congenital syphilis	1. Obvious lesions at birth or appearing as late as four months after birth. 2. Mucous patches in mouth. 3. May become jaundiced. 4. May develop snuffles (rhinitis). 5. Hoarse voice. 6. Anemic. 7. Liver and spleen enlarged.	Infant's mother contracted syphilis during pregnancy.	Prevented by good prenatal care. Penicillin to mother since it crosses the placenta barrier and treats the baby.	Isolation with growing and drooling. Cleanse more before feeding. Give antibiotics as ordered.

PROBLEMS OF THE NEWBORN

PROBLEMS OF DRUG-ADDICTED MOTHER

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
Drug addiction in newborn	1. Listlessness. 2. Tremors. 3. Shrill cry. 4. Convulsions or twitching of extremities or face. 5. Diarrhea. 6. Vomiting. 7. Anorexia. 8. Yawning. 9. Sneezing. 10. Excessive mucus.	Addicted mother.	1. Increase fluid intake. 2. Supportive measures. 3. Diminishing doses of sedatives. 4. Phenobarbital or thorazine for diarrhea.	1. Minimal handling. 2. Adequate hydration.

PROBLEMS OF THE NEWBORN

PROBLEMS OF THE BABY OF A DIABETIC MOTHER

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
Baby of a diabetic mother NOTE: Condition of body depends upon: 1. Duration and severity of diabetes. 2. How well controlled the diabetes is. 3. Presence of complications. 4. Sometimes necessary to deliver the infant prematurely.	If infant's mother has severe or poorly controlled diabetes. a. Large for gestational age b. Jittery, lethargic poor eater. c. Peculiar high-pitched cry. d. More congenital anomalies than infants of non-diabetic mothers. e. Hypoglycemia. f. Respiratory distress syndrome. g. Hyperbiliribinemia and hypocalcemia.	1. Diabetic mother	1. Clear airway. 2. Aspiration of stomach (to reduce danger of aspirating regurgitation). 3. Treat as a premature baby (incubator). 4. Treat as a respiratory disease. 5. Dextrostix immediately after birth and hourly thereafter.	1. Oral feedings begun early. 2. Monitor temperature closely. 3. Watch for signs of hypoglycemia, apnea, limpness, failure to feed, tremors and/or convulsions.

PROBLEMS OF THE NEWBORN

BIRTH INJURIES

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
Intracranial hemorrhage Bleeding anywhere within the cranial vault.	If bleeding is slow - good condition at birth with symptoms appearing in a few hours or days after birth. 1. Drowsiness 2. Apathy 3. Sharp, shrill cry 4. Pallor cyanosis 5. Grunting respirations 6. Convulsions 7. Flaccidity or spasticity	1. Difficult vaginal delivery. 2. Excessive pressure on the fetal head in a rapid delivery. 3. Prolonged pressure on the head.	1. Supportive measure. 2. Sedation for convulsions. 3. Prophylactic antibiotics. 4. Vitamin C and K to control hemorrhage.	1. Provide warmth. 2. Oxygen 3. Gentle, minimal handling. 4. Close observations of vital signs. 5. Gavage or intravenous feeding. 6. Head higher than hips to lower intracranial pressure (not in Trendelenburg position) 7. Support to parents.
Facial paralysis. Paralysis on one side of the face due to pressure on the facial nerve from the use of forceps.	1. Eye on affected side may remain open. 2. Mouth drawn to opposite side. 3. Face appears distorted. 4. May have difficulty sucking.	Pressure on facial nerve from the use of forceps.	Condition temporary with no specific treatment.	1. Support to concerned parents. 2. Assist with feeding since sucking may be a problem.

PROBLEMS OF THE NEWBORN

BIRTH INJURIES

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	NURSING CARE
Brachial Plexus Palsy. Paralysis of the upper arm, lower arm or whole arm.	Affected arm hangs limply at the infant's side with the elbow extended and the hand rotated upward.	Breech delivery with forceful pulling on shoulders. Vertex delivery or large baby with shoulder dystocia.	Splinting of the arm. Passive range of motion. Reconstruction surgery.	Do ROM as ordered. Teach parents how to care for the infant with the splint. Teach parents how to do ROM exercises.
Fractures and dislocations	Infant refuses to move the affected arm or leg. Cries when affected part is moved. Visual angulation or hypermobility of the bone. Hematoma over the fracture. Moro reflex is reduced on the side of the fracture.	Manipulative procedures, such as version, and difficult deliveries. Difficult breech.	Fractures are set and splints, slings, casts and traction are used as necessary. Manipulation for dislocations.	Maintain good alignment of affected part. Emmobilize affected part. Familiarize family with care of infant.
Problems of hearing	No response to hearing test		Followup care	Be sure tests are done prior to discharge.

LEARNING ACTIVITIES - continued

ACTIVITY #2. Exercise on Problems of the Newborn

Directions: Read Chapter 19, pages 303-328, of Bethea. Complete the following exercise after you have read the chapter.

Define the vocabulary words.

1. Asphyxia neonatorum: ______________________________

2. Respiratory distress syndrome (hyaline membrane): ______________________________

3. Pneumonia: ______________________________

4. Cleft lip (unilateral, bilateral): ______________________________

5. Cleft palate: ______________________________

6. Phocomelia: ______________________________

7. Hydrocephalus: ______________________________

8. Spina bifida: ______________________________

9. Meningocele: ______________________________

10. Meningomyelocele (myclomeningocele): ______________________________

11. Clubfoot (talipes): ______________________________

LEARNING ACTIVITIES - continued

12. Tracheoesophageal fistula: ______________________

13. Pyloric stenosis: ______________________

14. Omphalocele: ______________________

15. Imperforate anus: ______________________

16. Cryptorchidism: ______________________

17. Epispadias: ______________________

18. Hypospadias: ______________________

19. Down's syndrome (mongolism): ______________________

20. Kernicterus: ______________________

21. PKU (Phenylketonuria): ______________________

22. Exchange transfusion: ______________________

23. Erythroblastosis fetalis: ______________________

LEARNING ACTIVITIES - continued

24. Phototherapy: ______________________________

____

25. Thrush: ______________________________

____

26. Rudmose: ______________________________

____

27. Rudmose Warblet or Vicon Apriton: ______________________________

____

Complete the following.

28. List four ways parents might react to newborns with problems.

a. ______________________________
b. ______________________________
c. ______________________________
d. ______________________________

29. List three common causes of asphyxia neonatorum.

a. ______________________________
b. ______________________________
c. ______________________________

30. List five characteristics of the respirations of an infant with respiratory distress syndrome.

a. ______________________________
b. ______________________________
c. ______________________________
d. ______________________________
e. ______________________________

LEARNING ACTIVITIES - continued

31. List three types of infants in whom respiratory distress syndome occurs most often.

    a. ______

    b. ______

    c. ______

32. List three possible causes of pneumonia in the newborn.

    a. ______

    b. ______

    c. ______

33. List five physical characteristics of a newborn with pneumonia.

    a. ______

    b. ______

    c. ______

    d. ______

    e. ______

34 List and describe two common types of congenital heart defects.

    a. ______

    ______

    b. ______

    ______

35. What is the major problem of infants with cleft lip and cleft palate?

    ______

    ______

    ______

    ______

LEARNING ACTIVITIES - continued

36. List one cause of phocomelia. ______________________________

37. List three causes of hydrocephalus.

a. ______________________________

b. ______________________________

c. ______________________________

38. Discuss possible nursing concerns with a child with hydrocephalus.

____

____

____

39. What two complications are common with the hydrocephalus?

a. ______________________________

b. ______________________________

40. List three possible measures that can be taken to correct clubfoot (feet).

a. ______________________________

b. ______________________________

c. ______________________________

41. What causes the excessive drooling in the infant with tracheoesophageal fistula?

____

____

42. Discuss the symptoms of the child with pyloric stenosis.

____

____

43. Give the immediate care of an infant born with an omphalocele.

____

____

LEARNING ACTIVITIES - continued

44. Discuss the two types of birth marks.

45. Describe the physical appearance of an infant with Down's syndrome.

46. List the possible causes of Down's syndrome.

47. Discuss the treatment of an infant with "PKU."

48. What is the stated cause when infants fail to thrive?

49. Discuss "Rh" incompatibility and its treatment.

LEARNING ACTIVITIES - continued

50. Discuss "ABO" incompatibility.

____

____

____

51. Discuss the nursery care of an infant receiving phototherapy.

____

____

____

52. List and discuss four infectious organisms that can cause a problem in the newborn.

a. ______________________________
b. ______________________________
c. ______________________________
d. ______________________________

53. List the symptoms manifested by a drug-addicted newborn.

a. ______________
b. ______________
c. ______________
d. ______________
e. ______________
f. ______________
g. ______________
h. ______________
i. ______________
j. ______________

54. Discuss the characteristics of an infant born to a diabetic mother.

____

____

____

____

____

LEARNING ACTIVITIES - concluded

55. Name and discuss three kinds of birth injuries.

a. ______________________________

____

b. ______________________________

____

c. ______________________________

____

56. Discuss the possible advantage of conducting a hearing test on the newborn.

____

____

unit 18

NURSING CARE OF MOTHERS AND NEWBORNS

Module E3 - Low Birth Weight and Premature Infants

RATIONALE

Nursing care is extremely significant in the prognosis of a low birth weight and premature infant. As a practical nurse, you will play an important role in observing and identifying problems related to immaturity.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify how weight and gestational age are used in classifying newborns.
2. Recognize the causes of prematurity.
3. Identify the internal development and the activity of the premature infant's organs.
4. Identify the nursing care given to a premature infant.
5. Recognize words listed in the exercise in this module.

CLINICAL OBJECTIVES

To the instructors satisfaction, when given a premature infant, you will:

1. Describe the nursing care of the premature infant.
2. Describe the general appearance of the infant and identify the specific nursing care the premature infant should receive.
3. Distinguish the physical characteristics of a premature baby from those of a normal newborn.

LEARNING ACTIVITIES

Directions: In Part III of Module E on prematurity you will read your textbook Introductory Maternity Nursing by Doris C. Bethea and complete the exercise in this module. After you have completed the exercise, check your answers with your text. If you have any questions, ask your instructor for help.

LEARNING ACTIVITIES - continued

Activity #1. Low Birth Weight and Premature Infants

Directions: Read Chapter 20, pages 329-341, of Bethea and complete the following exercise.

1. Discuss how weight and gestational age are used in classifying newborns.

____

____

____

2. List five problems preterm infants may develop.

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

   e. ______________________________

3. What information does the infant physical and neurological assessment provide (e.g. the Dubowitz)? ______________________________

____

4. Define "prematurity." ______________________________

____

5. Define low birth weight. ______________________________

____

6. List five known causes of prematurity.

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

   e. ______________________________

LEARNING ACTIVITIES - continued

7. List six common causes of death among premature infants.

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

   e. ______________________________

   f. ______________________________

8. Describe the external appearance of a premature infant.

   ____

   ____

   ____

9. Describe the development of the following internal organs of the premature infant.

   Respiratory system: ______________________________

   ____

   Blood vessels: ______________________________

   ____

   Stomach: ______________________________

   ____

   Nervous system: ______________________________

   ____

10. List seven nursing measures that can help to prevent infections in the premature infant.

   a. ______________________________

   b. ______________________________

   c. ______________________________

   e. ______________________________

LEARNING ACTIVITIES - concluded

e. ______

f. ______

g. ______

11. Describe the physical care given to the premature infant.

______

12. Discuss "retrolental fibroplasia." ______

13. Discuss the nurse's responsibilities to the premature infant's parents.

______

14. What is the best way to control prematurity? ______

POST TEST

Module E

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle the letter on your answer sheet. DO NOT WRITE ON THIS TEST.

SITUATION:

Mrs. New is 20 years old. She was in labor for 18 hours before she gave birth to her first baby. She had a spinal for anesthesia. The baby, a 7 lb. 4 oz. boy, was active and cried lustily as soon as he was born. He became pink right away except for his hands and feet, which remained blue. His heart rate was over 100, his head was quite elongated due to the prolonged pressure and a partially dilated cervix.

The following questions relate to the above situation.

1. When Mrs. New saw her son for the first time, she wanted to know what the vernix caseosa was. The nurse told her it is a(an):

   a. jelly-like substance
   b. flaky substance
   c. cheese-like substance for protection
   d. oily substance

2. The swelling caused by prolonged pressure on the baby's head by a partially dilated cervix is called:

   a. cephalhematoma
   b. anterior fontanel
   c. caput succedaneum
   d. hydrocephalus

3. The scale commonly used to evaluate the newborn at birth is the:

   a. crede
   b. duncan
   c. schultze
   d. apgar

4. Based on the system used to evaluate newborns, how would you rate Mrs. New's newborn?

   a. 6
   b. 7
   c. 8
   d. 9

POST TEST - continued

5. This scale evaluates the newborn in all of the following except:

   a. temperature
   b. respiratory effort and color
   c. heart rate
   d. muscle tone and reflex response

6. As the nurse caring for Mrs. New's baby, you know that he must be closely observed for the first 12 hours after birth. You will carefully check for any evidence of:

   1. bleeding from the cord
   2. fecal impaction
   3. jaundice
   4. clubfeet or cleft palate
   5. abdominal distention

   a. 1, 2, 4, 5
   b. 1, 2, 3, 4
   c. 1, 3, 4, 5
   d. 2, 3, 4, 5

7. It is also necessary to keep a record of ___ on Mrs. New's baby.

   1. first voiding
   2. first stool
   3. color of stool
   4. respiration
   5. feedings

   a. 1, 2, 3
   b. 2, 3, 4, 5
   c. all are correct
   d. 1, 3, 4
   e. 1, 2, 5

8. Identification of the baby should be completed:

   a. in the nursery
   b. when the mother is fully reactive
   c. after birth
   d. before leaving the delivery room

9. The normal newborn's respirations should be:

   a. 35-40 and irregular
   b. 50-60 and regular
   c. 35-40 and regular
   d. 50-60 and irregular

POST TEST - continued

SITUATION:

Ms. James gave birth to an 8 lb. 2 oz. baby boy. The baby had a lusty cry at birth. Ms. James had a vaginal infection prior to delivery that cultured out to be candida albicans.

The following questions relate to the above situation.

10. Since Ms. James had a vaginal infection with the organism candida albicans, the nurse might suspect the newborn to develop which infection?

    a. diarrhea
    b. pustular erruptions
    c. thrush
    d. impetigo

11. Measures taken by the nursery nurse to prevent infection and/or to keep infection from spreading in the infant include:

    1. changing into a scrub gown each day
    2. washing hands before starting to work and before caring for each baby
    3. keeping fingernails short with no nail polish
    4. limiting personnel to those involved in the care of the infant

    a. 1, 2, 3
    b. 1, 3, 4
    c. 2, 3, 4
    d. all are correct

12. Baby James has been in the nursery several days and has not developed any type of infection; however, Baby James has a red hivelike irritation. What is this irritation called?

    a. stork bites
    b. erythema marginatum
    c. erythematous blotches
    d. erythroblastosis fetalis

13. Care of the newborn infant's cord is primarily to prevent infection. The signs of infection are:

    1. moistness of cord
    2. redness
    3. foul odor from the stump
    4. bleeding

    a. 1, 2, 4
    b. 1, 2, 3
    c. 1, 2
    d. 2, 4

POST TEST - continued

14. Baby James' crib was moved suddenly and his arms and legs flew up. This normal reflex is called:

    a. suck
    b. tonic neck
    c. rooting
    d. Moro

15. When the doctor visited Ms. James, she told her to think about having her child's condition of phimosis treated. This condition is treated by:

    a. circumcision
    b. exchange transfusion
    c. orchidopexy
    d. antibiotics

16. Before Baby James could be discharged, he had to have a PKU test. PKU is a hereditary problem in which the body is unable to metabolize a/an:

    a. fat
    b. amino acid
    c. carbohydrates
    d. minerals

SITUATION:

Mrs. Johns had a baby girl on Saturday. By Tuesday, she expected to go home. Since the baby was somewhat yellow, she had to stay an extra day. Mrs. Johns just knew there was something terribly wrong with her little girl because she had lost weight since birth and had a bloody vaginal discharge that was now turning yellow. On Wednesday when they were discharged together, Mrs. Johns felt much more reassured that all was well with her infant.

17. The yellowish color that Baby Johns developed on the second and third day after birth is called:

    a. jaundice
    b. physiologic neonatorum
    c. icterus jaundice
    d. icterus neonatorum

18. During the first few days after birth, the newborn infant loses weight. This loss of weight is referred to as:

    a. neonatal weight loss
    b. physiologic weight loss
    c. pseudo-neonatal weight loss
    d. psychological weight loss

POST TEST - continued

19. This weight loss of the newborn infant is ___% of his birth weight.

    a. 1-5
    b. 5-10
    c. 10-15
    d. 10-20

20. The nurse could reassure Mrs. Johns that vaginal discharge is normal. The newborn female may have a small, bloody vaginal discharge known as:

    a. gynecomastia
    b. menstruation
    c. vaginitis
    d. pseudo-menstruation

21. Nursing care of a drug-addicted newborn includes:

    a. encouraging activity
    b. providing intermittent stimulation
    c. minimal handling and intense observation
    d. continued administration of drug that the infant is addicted to

SITUATION:

Mrs. Hicks, an 18-year-old, had a very long and difficult labor. Her membranes ruptured approximately 36 hours before she delivered. Immediately after the baby was born, the baby was suctioned and transported to the nursery.

22. If the newborn is not suctioned immediately after birth, what can happen?

    1. aspirate fluid and mucus
    2. regurgitation
    3. swallow amniotic fluid
    4. cyanosis

    a. 1, 4
    b. 1, 2
    c. 2, 4
    d. 2, 3

23. Dangers associated with early rupture of the membranes include:

    1. dry birth
    2. infection
    3. shock
    4. hyaline membrane
    5. prolapsed cord

    a. 1, 3, 4
    b. 2, 5
    c. 1, 2, 5
    d. 2, 4

POST TEST - continued

24. Vitamin K is a routine order for all newborns. It is to:

    a. reduce hemorrhage
    b. stimulate respiratory effort
    c. prevent hemorrhagic disease
    d. lower prothrombin time

25. Achromycin is instilled into the newborn's eyes to:

    a. prevent staphylococcal infection
    b. prevent spirochetal infection
    c. prevent streptococcal infection
    d. prevent gonococcal infection

26. A baby born to a diabetic mother may have:

    1. hypoglycemia
    2. LGA
    3. SGA
    4. hyperglycemia

    a. 1, 3
    b. 1, 2
    c. 2, 4
    d. 3, 4

27. When Baby Hicks went out to visit her mother for the first time, she had a black tarry stool. The black tarry material the newborn expells first is called:

    a. transitional stool
    b. melena stool
    c. hematest positive stool
    d. meconium stool

28. Mrs. Hicks examined her new baby and noticed the "soft spot" (anterior fontanel). She asked the nurse when it would close. The anterior fontanel usually closes by:

    a. 16 months
    b. 18 months
    c. 12 months
    d. 24 months

29. The next time Baby Hicks saw her mother was for her first feeding. After Baby Hicks ate, she regurgitated some of the formula. The immaturity of what sphincter causes the infant to regurgitate easily?

    a. cardiac sphincter
    b. pyloric sphincter
    c. gastric sphincter
    d. duodenal sphincter

POST TEST - continued

30. When you pick Baby Hicks up to return her to the nursery following feeding, she should be positioned on her:

    1. back
    2. side
    3. abdomen

    a. 1, 2
    b. 1, 3
    c. 2, 3

31. Possible causes of asphyxia neonatorum are:

    a. toxemia, placenta previa, abruptio placentae
    b. toxemia, previous C-Section, overly medicated mothers
    c. prolapsed cord, rickets, abruptio placentae

SITUATION:

Jane is 8 months pregnant and is having intermittent bleeding. She has been hospitalized to prevent an early delivery. In spite of medical treatment, Jane gave birth to a 3 lb. 4 oz. premature infant. The infant was taken immediately to the ICU nursery. Several hours after birth, the infant was having a great deal of difficulty breathing. X-rays revealed that the infant had hyaline membrane.

The following questions relate to the above situation.

32. The condition in which hyaline membrane forms in the alveoli of the lung is called:

    a. asphyxia neonatorum
    b. retraction
    c. hypoxia
    d. respiratory distress syndrome

33. The infant with hyaline membrane displays what type of breathing?

    1. rapid, labored, grunting
    2. slow, labored and loud
    3. flared nostrils, retraction
    4. seesaw breathing

    a. 1, 2, 4
    b. 2, 3, 4
    c. 1, 3, 4
    d. 1, 3

34. The cause of hyaline membrane is:

    a. an inborn error in metabolism
    b. hereditary
    c. a chromosome abnormality
    d. not known

POST TEST - continued

35. The concentration of oxygen in the incubator housing the premature infant should be tested periodically and kept at less than 40% to protect the infant against:

    a. oxygen saturation
    b. cataracts
    c. mental retardation
    d. blindness

36. The situation mentioned in the previous question gives rise to what condition?

    a. cerebral palsy
    b. RDS
    c. retrolental neonatorum
    d. retrolental fibroplasia

37. The premature infant has a tendency to have abdominal distention and constipation. These are specifically due to:

    a. decreased peristalsis and poorly developed abdominal muscles
    b. reduced intake
    c. lack of fluid intake
    d. narrow stomach and incomplete sphincters

38. Which of the normal newborn reflexes are absent in the premature infant, making feeding a problem?

    1. Moro
    2. gagging
    3. sucking
    4. swallowing
    5. tonic neck

    a. 1, 2, 3, 5
    b. 1, 2, 3, 4
    c. 2, 3, 4
    d. 1, 3, 4
    e. 2, 3, 4, 5

Directions: Answer the following questions individually.

39. The condition in which the infant does not breathe 30 to 60 seconds after birth is called:

    a. respiratory distress syndrome
    b. asphyxia neonatorum
    c. pneumomediastinum
    d. hypoxia

POST TEST - continued

40. The normal newborn cannot digest:

    a. fats
    b. carbohydrates
    c. protein
    d. amino acids
    e. minerals

41. What is the leading cause of death among newborn infants in this country?

    a. prematurity
    b. heart defect
    c. lack of prenatal care
    d. congenital anomalies

42. The leading cause of death among newborns may be caused by:

    1. multiple pregnancies
    2. premature rupture of the membranes
    3. excessive smoking
    4. placenta previa
    5. inadequate diet

    a. 1, 3, 4, 5
    b. 2, 3, 4, 5
    c. 1, 2, 4, 5
    d. all are correct
    e. 1, 2, 3, 5

43. The daily care the newborn requires is not designed to meet:

    a. need to be free of infection
    b. physical needs
    c. emotional needs
    d. staff's needs for organized atmosphere

44. When a blood vessel in the periosteum of a skull bone of the neonate has ruptured and bleeding is occurring between the periosteum and the bone, this is called:

    a. cephalhematoma
    b. caput succedaneum
    c. hydrocephalus
    d. encephalocele

45. The major problem with the infant who has a cleft lip and a cleft palate is:

    a. emotional
    b. breathing
    c. feeding
    d. pain

POST TEST - concluded

46. Phocomelia is a condition in which the infant is born:

    a. without a tube connecting the esophagus and trachea
    b. with a defect in the abdominal wall
    c. with a defect in the bony part of the spinal canal
    d. without arms and/or legs

47. A defect of the spine in which the bony part of the spinal canal fails to close and the nerve fibers as well as the membranes protrude is called:

    a. meningomyelocele
    b. meningitis
    c. meningocele
    d. omphalocele

48. Another name for Down's syndrome is:

    a. microcephalic
    b. mongolism
    c. monigiasis
    d. mongolian

49. Atresia of the esophagus is a congenital anomaly of the newborn in which:

    a. the esophagus is narrow at some point
    b. the esophagus is pouchlike at some point
    c. the esophagus connects with the trachea at some point
    d. the esophagus is closed at some point

50. Which of the following relates to treatment and prevention of Rh sensitization?

    1. Phototherapy has been found effective in treating mild to moderately sensitized newborns.
    2. Intrauterine transfusion may be the treatment of choice in severe to critical sensitization.
    3. Rho GAM is given to all Rh-negative mothers following delivery.
    4. Rho GAM provides an active immunity in the mother.

    a. 1, 3
    b. 1, 2
    c. all are correct
    d. 2, 3, 4

ANSWERS TO POST TEST

Module E

1. c
2. c
3. d
4. d
5. a
6. c
7. d
8. d
9. a
10. c
11. d
12. c
13. b
14. d
15. a
16. b
17. d
18. b
19. b
20. d
21. c
22. a
23. b
24. c
25. d
26. b
27. d
28. b
29. a
30. c
31. a
32. d
33. d
34. d
35. d
36. d
37. a
38. c
39. b
40. a
41. a
42. d
43. d
44. a
45. c
46. d
47. a
48. b
49. d
50. b

NURSING CARE OF MOTHERS AND NEWBORNS

Module F - O.B. Medications

RATIONALE

To give safe and effective care to the patient during pregnancy, labor and postpartum, the nurse needs to be familiar with medications commonly used. It is also important to be familiar with some of the drugs used for newborns.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Recognize the actions and side effects of the O.B. medications discussed in this module.

LEARNING ACTIVITIES

Directions: All the information needed to complete this module is included in the Physicians' Desk Reference by Medical Economics Company. Complete the O.B. drug worksheets in the module to help you to learn the information required. If you have any questions, go to your instructor.

ACTIVITY #1. O.B. Medications

Directions: Using a current Physicians' Desk Reference (PDR) or drug handbook, complete the O.B. drug worksheets on the following pages. Give the usual dosage, action, indications for use in O.B. and the side effects for each drug listed. As you are completing the worksheets, pay attention to how each drug is spelled. This will help you to remember the drug and to recognize it when you see it in print.

O.B. DRUG WORKSHEET

MEDICATION	DOSAGE	ACTION	INDICATIONS FOR USE IN O.B.	SIDE EFFECTS
Achromycin, opthalmic ointment				
Americane spray				
Apresoline 1 cc				
Aqua Mephyton				
Aromatic Ammonia Aspirol				
Benadryl 1 cc				
Bendectine				
Caffeine Sodium Benzoate				

MEDICATION	DOSAGE	ACTION	INDICATIONS FOR USE IN O.B.	SIDE EFFECTS
Calcium Gluconate 10 cc				
Compazine 2 cc				
Deladumone O.B.				
Depo-Testosterone 1 cc				
Dermaplost Spray				
Dialose Plus Capsule				
Doxidan Capsule				
Dramamine 1 cc				
Dulcolax Tablet				

MEDICATION	DOSAGE	ACTION	INDICATIONS FOR USE IN O.B.	SIDE EFFECTS
Ergotrate Tablet				
Fleets Enema				
Ilopan 2 cc				
Lorfan 1 cc				
Maalox Liquid 10 cc				
Magnesium Sulfate 2 cc				
Mammol Cream				
Masse Creme				
Methergine 1 cc				

MEDICATION	DOSAGE	ACTION	INDICATIONS FOR USE IN O.B.	SIDE EFFECTS
Modane Tablet				
Myliccon Tablet				
Nalline				
Parlodel				
Pitocin				
Potassium Chloride				
Prostigmin 1 cc				
Pyridoxine 1 cc				
Rho Gam				
Scopolamine I.M.				

MEDICATION	DOSAGE	ACTION	INDICATIONS FOR USE IN O.B.	SIDE EFFECTS
Serpasil 2 cc				
Tabron				
Tace				
Tigan 2 cc				
Tucks				
Vistaril 1 cc				

POST TEST

Module F

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. In the eighth month of Jan's pregnancy, a diagnosis of preeclampsia is made. Jan is receiving magnesium sulfate therapy. The purpose of this medication is to:

   a. promote bowel elimination
   b. reduce central nervous system irritability
   c. replace a needed mineral
   d. fight infection

2. Mrs. Jones' labor is induced. She is receiving a solution of Pitocin intravenously. Which would be a sign to discontinue use of the medication?

   a. fetal heart rate of 150 beats per minute
   b. maternal blood pressure of 130/85
   c. appearance of bloody show
   d. uterine contractions lasting more than 90 seconds

3. Following delivery, Mrs. Jones received an oxytocic drug. The action of this drug is to:

   a. bring about firm contractions of the uterus
   b. relax the uterus
   c. push the cervix up
   d. have no effect upon the uterus

4. What drug might be given to reduce uterine bleeding?

   a. Deladumone
   b. Methergine
   c. Parlodel
   d. Mylicon

5. Which of these mothers is likely to be given Rho GAM immune globulin?

   a. Rh negative mother who has an Rh negative baby
   b. Rh negative mother who has had a spontaneous abortion
   c. Rh positive mother who has had an Rh negative baby
   d. Rh positive mother who has just delivered twins

POST TEST - continued

6. The mother's breast can be dried up or congestion relieved by the administration of:

    1. Parlodel
    2. Testosterone
    3. Cafergot
    4. Deladumone

    a. 1, 2, 3
    b. 1, 2, 4
    c. 2, 3, 4
    d. 1, 3, 4

7. For what purpose is Prostigmin given to the postoperative patient?

    1. treatment of respiratory depression
    2. treatment of uterine cramping
    3. treatment of postoperative distention
    4. treatment of postoperative urinary retention

    a. 1, 3
    b. 2, 3
    c. 3, 4
    d. 2, 4

8. Dermaplast is frequently ordered for the postpartum patient:

    a. to relieve pain in episiotomy
    b. to increse circulation to the episiotomy
    c. to seal the episiotomy site to prevent burning after urination
    d. to heal the episiotomy

9. What ointment or cream may be recommended to the pregnant mother to prepare her nipples prior to delivery.

    1. Nupercaine ointment
    2. Mammol ointment
    3. A & D ointment
    4. Masse cream

    a. 1, 2, 3
    b. 2, 4
    c. 3, 4
    d. 2, 3, 4
    e. 1, 4

POST TEST - concluded

10. State law requires that medicine be put in the baby's eyes at birth to prevent ophthalmia neonatorum. What infection is being prevented?

    a. syphilis
    b. thrush
    c. gonorrhea
    d. herpes

11. Scopolamine is classified as an OB:

    a. analgesic
    b. sedative
    c. amnesic
    d. tranquilizer

12. Jane, 32 weeks pregnant, is admitted to the hospital with severe preeclampsia. Which of these medications is likely to be ordered for Jane?

    a. an analgesic
    b. an antibiotic
    c. a laxative
    d. a sedative

13. Which is a hematinic with a stool softner?

    a. Tabron
    b. Senakot
    c. Modane
    d. Doxidan

14. Prophylaxes of hemorrhagic disease of the newborn is treated with:

    a. Achromycin
    b. Acquamephyton
    c. Nalline
    d. Syntocinon

15. What drug would be used as a narcotic antagonist for neonate narcosis?

    a. Nalline
    b. antipyrine
    c. pyridoxine
    d. caffeine sodium benzoate

ANSWERS TO POST TEST

Module F

1. b
2. d
3. a
4. b
5. b
6. b
7. c
8. a
9. d
10. c
11. c
12. d
13. a
14. b
15. a

unit 18

NURSING CARE OF MOTHERS AND NEWBORNS

Module G - Cultural Aspects in the Nursing Care of Mother and Newborns

RATIONALE

Culture affects the way an individual regards illness. Individuals under the stress of illness tend to place considerable reliance on culturally learned patterns of coping. It is important to know what a condition means to the individual and what bodily responses are viewed as life-threatening or as possessed with qualities of healing.

Attention to culturally determined needs reflects an awareness of and respect for individual differences and can contribute greatly to the reduction of stress for the patient and her family. Remember that each culture has its own practices and beliefs as does each individual. As time progresses, many traditional practices will be blended with more contemporary views. Not all traits, values and practices will be retained by successive generations.

It is important to remember that many nonscientific "old-wives' tales" exist in "anglo" culture also. Many young pregnant women have little exposure to modern, scientific approaches to pregnancy and childbirth.

The cultural information discussed in the following pages is related to the other modules covered in Unit 18, Nursing Care of Mothers and Newborns.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Increase your awareness of cultural dimensions that affect your ability to provide holistic health care.
2. Increase your awareness of how the Afro-American, American Indian and Mexican-American view:
   a. the menstrual cycle
   b. pregnancy
   c. the discomforts of pregnancy
   d. childbirth
   e. postpartum
   f. contraceptions
   g. the newborn
3. Increase your awareness of mythical views of the Afro-American, American Indian and Mexican-American that relate to pregnancy.
4. Increase your awareness of diseases common to members of the Afro-American, American Indian and Mexican-American cultures.

SOURCES OF INFORMATION

Abril, Irene. "Mexican-American Folk Beliefs That Affect Health Care," Arizona Nurse, May-June, 1975, 14-18.

SOURCES OF INFORMATION - continued

Clark, Ann L. Culture Childbearing Health Professionals, Philadelphia: Davis Company, 1978.

Evans, Palmer C. "The Navajo Way: As Related To Pregnancy, Childbearing," Arizona Medicine, February 1975, 97-99.

Kamenetzky, Stephen A. "A Clinical and Histologic Study Of Diabetic Nephropathy in the Pima Indians," The Journal of the American Diabetic Association, January 1974, 61-68.

LEARNING ACTIVITIES

Directions: All the information you need to complete this module is included. If you have any questions, ask you instructor to help you. You will not be given a written test over this material but be prepared to show an increased awareness of cultural characteristics in a class discussion or when given an assignment in the clinical area of a patient with significant cultural characteristics.

ACTIVITY #1. How Various Cultures View the Menstrual Period

Directions: Read the following information to help you develop an awareness of how different cultures view the menstrual cycle. Check your awareness in a class discussion.

Afro-American

Menstruating regularly is regarded as a sign of good health and well-being.

Menstruation is a time when a black woman thinks she is "sick."

Indian - Papago*

First menses females are not permitted to eat salt. meat or anything greasy.

Bland diet of rested corn, cholla buds, wild spinach, porridges made from mesquite beans, saquaro seed and ground wheat is followed during menses.

Females, when in menses, are not permitted to live and sleep with the family or prepare meals for the family. This practice continues until females take a partner.

Males are not permitted to touch menstruating females. Females must be virgins until of age to take a partner.

Mexican-American

Menstruation is considered an unpleasant but natural condition.

During menstruation, one cannot wash hair, take shower or tub bathe.

Foods avoided during menstruation include sour and iced food (lemon and citrus drinks).

Cold and sour foods cause the menstrual flow to coagulate as do cold baths but warm baths cause hemorrhage.

If no menses, the woman is in danger from "stopped-up" blood.

Herbs that help the menstrual flow are rosemary, rue or a stronger one known as epazote or wormseed.

*This example illustrates traditional beliefs among Papago Indians. It must be remembered that not all members of a tribe follow traditional practices or hold traditional beliefs. It is also important to remember that different tribes have different belief systems. In Arizona, related tribes such as the Pima and Papago, the Yavapai and the Walapai, or the Apache and the Navajo will share many similar beliefs. However, belief systems between two culturally and historically unrelated tribes, such as the Papagos and Apaches, should be expected to differ substantially. You must become familiar with the belief system of the tribe whose members you are treating. In this module, Indian cultural beliefs are illustrated by examples from southern Arizona tribes such as the Papago and the Pima.

How various Cultures View the Menstrual Period - continued

Afro-American	Indian	Mexican-American
	Physical contact with males may cause sickness, tragedy or even death to a close relative or family member.	Dysmenorrhea is treated with chamomile mint and cinnamon teas.
	After first menses stops, cold bath is given outside of the house (winter or summer) to physically toughen the skin and aid in mental strengthening.	Sexual relations are culturally permitted one week after the menstrual period ends. Therefore, intercourse is most likely to occur at the time when a woman is actually most fertile but when she believes that she is "safe."

ACTIVITY #2. Diseases Common to Various Cultures

Directions: Read and study the following information. Check your answers in a class discussion.

Afro-American	Indian	Mexican-American
Sickle cell anemia is a chronic, hereditary, hemolytic anemia found in descendants of Africans. In the U.S. it is found most commonly in blacks.	Pima Indians have the highest recorded prevalence of diabetes in the world, 40% of those 35 years of age are affected. All have diabetic nephropathy predominant form of kidney disease.	
The carrier state of the sickle cell trait occurs in about 1 in 12 black births.		
Women diagnosed as having sickle cell have up to 44% incidence of spontaneous abortion, premature birth, stillbirths and other fetal wastage.		

Diseases Common to Various Cultures - continued

Afro-American	Indian	Mexican-American
Complications during pregnancy with sickle cell include thrombotic crises, pulmonary infarcts, eclampsia, pneumonia and urinary tract infections.		
Pregnant women diagnosed as having chronic hypertension frequently react with a full blown vasculorenal syndrome similar to and sometimes indistinguishable from preeclampsia.		
Many of the health problems associated with poverty affect minorities more dramatically than the rest of the population. Socio-economic and cultural problems producing alcohol and drug abuse, widespread presence of communicable diseases and serious nutritional deficiencies greatly affect the health of the pregnant woman and her unborn child.		

ACTIVITY #3. How Various Cultures View Prenatal Care and Pregnancy

Directions: Read the following information. Check your awareness in a class discussion.

Afro-American

Socio-economic factors largely influence the way black women regard pregnancy.

Pregnancy is thought to be a state of wellness (one reason for the delay in obtaining prenatal care).

Prenatal care is preventive medicine, a concept foreign to many blacks. Because of poverty and segregated, inaccessible medical facilities, blacks have traditionally been accustomed to obtaining medical care only in crisis situations.

Black men view pregnancy as a positive sign of their verility and masculinity.

Pregnancy is proof of the fertility of both partners. Father is thought to be "whole" in his sexual functioning.

Sexual relations are viewed as natural during pregnancy since it is a state of wellness.

Indian

Indian families, in general, consider pregnancy a normal state.

Indian women who are pregnant generally use some form of modern medical care in addition to visiting the tribal medicine man for advise and traditional medicine.

Emphasis is on helping the pregnant woman to have a harmonious prenatal period by talking about good events, keeping away from ill people.

Mexican-American

Pregnancy desired as soon after marriage as possible.

Prayers and novena offered if pregnancy does not occur.

Herbs such as damiana, mariola and escorcionera are used to heat womb to encourage pregnancy. Herbs used as teas or in steam baths.

Once pregnancy is achieved, it is directed by the mother-in-law if traditional communication is followed.

Folk midwife is called partera.

Sexual activity is to continue during pregnancy in order to assure that the birth canal is kept well-lubricated. Thus, if the mate is absent the pregnant woman might be afraid of having a "dry" birth.

ACTIVITY #4. Various Folk Beliefs Concerning Pregnancy

Directions: Read the following information and check your awareness in a class discussion.

Afro-American

"Old wive tales" are - if a horse gets too close to you or blows in your face, the baby could be overdue.

Having your picture taken during pregnancy results in a stillbirth.

"Reaching up" with your hands and arms above your head causes the umbilical cord to wrap around the baby's neck.

Experiencing an emotional fright or not satisfying a craving can cause the baby to be marked.

"Cold" is believed to be synonymous with mucus. A "cold" of the bladder may be increased vaginal secretion. Every effort should be made to determine the symptom.

Indian

Using sharp instruments such as knives, needles and nails or tying knots can have an unkind effect on the unborn baby.

Papago taboos include a pregnant woman's staying away from animals that make children sick, not touching animals' blood, not allowing a dog to breathe upon her and also not looking directly into the sun.

Papago women who are pregnant may not have rabbit even though it is a basic traditional nourishment.

To a Papago, harm to or death of a dog will cause increased pain in pregnancy/delivery with increased blood loss and an inceased temperature of the newborn.

Mexican-American

Activities to avoid are hanging laundry or reaching high. This can cause knots in the umbilical cord.

One should not sit tailor fashion.

Baby showers are not planned early in the pregnancy to avoid inviting bad luck.

It is believed necessary to think pleasant thoughts and avoid quarrels. Azahar, orange blossom tea, is used to soothe nervousness.

Great anger (coraje) can result in spontaneous abortion, premature labor or knots in the umbilical cord.

The expectant mother drinks camomile tea during the eighth month to assure effective labor.

Exposure to the elements of nature, such as moonlight, eclipes, cold, heat, air, wind, sun and water, are believed to cause illness.

God influences or causes disease. "Seya por Dios" (it is God's will). A common practice among pregnant women is to pledge "ma as" to ensure welfare.

ACTIVITY #5. How Various Cultures View the Normal Discomforts of Pregnancy

Directions: Read the following information and check your awareness in a class discussion.

Afro-American

Craving during pregnancy can exist for unacceptable and potentially harmful substances such as laundry starch, clay or dirt. Suspect this when the patient has unusually low hemoglobin/hematocrit. Eating clay and laundry starch is believed to be a way of having a fat baby.

Striae and the darkening coloration are viewed as negative effects and are cosmetically undesirable.

Self-treatment of many common discomforts of pregnancy continue to exist today. Special effort must be made to discourage black women from self-medication during pregnancy.

Indian

Mexican-American

Nausea and vomiting are treated by drinking flour and water, flour and lemon juice or chamomile tea.

Heartburn is treated by commercial anti-acids and baking soda. Caused by eating chili or because the baby has much hair on his head.

Constipation is treated with medicine from drug stores as well as herbal teas. Teas include epazote or wormseed or wormwood and bluing, known as violent purges. Milder laxatives are made from rose petals or granada, the shell of the pomegranate.

Women are to keep active to assure easy delivery and also to sleep well to protect the fetus.

Women also must keep active so the baby won't grow too big.

ACTIVITY #6. How Various Cultures View Childbirth

Directions: Read the following information and check your awareness in a class discussion.

Afro-American

Black American women approach childbirth much as other women do with a mixture of emotional feelings.

Black women appear to be stoical in their behavior during labor. They do not desire to show weakness or bring undue attention to themselves.

When outcries are made during labor, they often reflect a strong religious foundation, such as "Lord have mercy" or "Lord, help me."

In the past, the men were not permitted in with their laboring wives. In the last few years, many young black couples have determined for themselves the benefit of sharing the childbirth experience.

Indian

Religious activities are an inevitable part of American Indian culture and a powerful force that gives direction to childbirth, childbearing and child naming.

Many deliver at home attended by the mother or older female relative.

Indians, in general, tend to see the life cycle as a normal, natural process.

Mexican-American

Males (such as physicians) are not to view genitals of someone other than his mate.

Women are instructed not to scream because it causes the uterus to rise. If they yell "Ai! Ai Yai!" it is during exhalation.

When women are in labor, the mother-in-law usually keeps the children.

ACTIVITY #7. How Various Cultures View Postpartum

Directions: Read the following information and check your awareness in a class discussion.

Afro-American

During the postpartum period, the woman is "sick," so no tub bathing, showering or shampooing of hair is allowed.

In the South Sassafras tea, brewed from the pungent sassafras root, is thought to have exceptional healing properties.

The foods not given to the new mother are hog chittelings and liver because it is thought that these meats will make her sick.

The degree of activity the new mother assumes when she comes home depends upon her circumstances.

Indian

Mother and child stay in bed for 4 to 12 days until she feels strong enough to resume her duties.

First food after birth should be soup of roasted wheat and seeds.

Until the baby goes to the medicine man, the mother should not eat salt or anything sweet or sour.

Three to four weeks after birth, the child and mother go to the medicine man for a ceremony in which the child is given a name to ensure its good health.

Mexican-American

Diet is restricted to chamomile tea immediately after delivery, then for two days toasted tortilla and boiled milk or atole-corn gruel. The next 2-3 days diet increases to include chicken pieces or soup. No vegetables or fruit that are acid or cold are eaten. Because of the delicate condition of the womb, cold, acid foods could produce a "cold womb" and sterility.

Convalescence for at least 14 days without bathing.

After childbirth, the mother must cover her feet, head (including ears) and body from the cold when going out. If this is not done, she can get "punzadas" (painful stitches) that can lead to blindness.

"Pasmp" (sudden infection) is also caused by carelessness in the postpartum period. Sulfur flower, dissolved in liquor and added to water, is drunk to treat this condition.

Binder or "faja" is worn for 40 days to prevent the cold from entering the reproductive organs.

How Various Cultures View Postpartum - continued

Afro-American	Indian	Mexican-American
		Carelessness during the puerperium, not using binder, disregarding rules of activity and eating wrong foods result in coldness of the uterus. The belly distends and can cause frigidity and sterility. After pains, "entuertos," are treated with warm manzanilla tea with one teaspoon of olive oil every three hours. Aspirin is not given "because it liquifies the blood." In traditional families, breast-feeding after lactation begins on the third day, as colostrum is believed to be "filthy." In order to stimulate meconium passage, the infant is given olive oil or castor oil. "Aniz verde" (anise seed) is used for breast-feeding when milk is diminishing.

ACTIVITY #8. How Various Cultures View the Family and Contraception

Directions: Read the following information and check your awareness in a class discussion.

Afro-American

Great emphasis on families, whether they are headed by two parents or one and on extended family members.

Black families have historically been large - from 5 to 10.

For lower-class blacks, sex and reproduction are not viewed as separate from one another. Pregnancy is considered "God's will."

Family planning is being practiced with moderate success by most blacks.

Most popular family planning methods chosen by Black Americans are the IUD and oral contraceptives. Diaphram and condom follow.

Tubal ligation is gaining in popularity with blacks but is not accepted universally. It is believed dangerous and it leaves a scar. Many blacks feel it will change a woman's nature by decreasing her libido, or it will result in a premature change-in-life.

Vasectomy is a rare choice of contraception, as the male mystique is considered threatened.

Indian

Extended family remains the basic unit.

Many family members assist in the up-bringing of a child.

The woman is usually the one who holds the family together.

Traditional Indian couples prefer to have as many children as they can.

Contraception control is poorly accepted and practiced.

Tea and specific herbs for brews to prevent pregnancy continue to be used.

Mexican-American

Traditionally, the family was male-dominated, now male dominance is moderate.

Traditionally, the extended family was dominant, now the desire is for independence from relatives in the home.

Traditionally, families were large, now fewer children (3 to 4) are desired.

Contraceptives still are not totally satisfactory. Modesty interferes with the use of a diaphram-foam, gelatins are "messy," condom "scratches."

Tubal ligation or hysterectomy was believed to cause vaginal thinning making intercourse painful (even if ovaries are not removed during hysterectomy).

Fear that men would lose interest in sex or no longer get aroused has made vasectomies unacceptable to most Mexican-Americans.

Oral contraceptives are okay because menstruation, necessary for health, is not disrupted. Disliked because of weight gain and pigment changes associated with using the Pill. Strong religious sanctions often make using the pill unacceptable.

How Various Cultures View the Family and Contraceptions - continued

Afro-American	Indian	Mexican-American
		Folk contraceptives include vaginal suppositories of olive oil, vinegar douche and oral preparations of marine faunas. Abortion is not generally practiced.

ACTIVITY #9. How Various Cultures View the Newborn

Directions: Read the following and check your awareness in a class discussion.

Afro-American	Indian	Mexican-American
Black mothers place emphasis on wanting the children "to behave." Crying excessively is seen as behaving in a "bad way." Black women question holding and playing with the baby for extended periods because the feeling still exists that these actions "spoil" the baby. Concern is to prepare the infant for the frustration in life by learning to cope early. Giving nicknames to both boys and girls is a tradition from African heritage. Clothing for the newborn tends to be excessive.	Infants are indulged. Child should be happy at all times. Babies usually nurse whenever they cry, so usually no regular feeding pattern exists. Table food started at about six months of age, when the child begins to reach and want his mother's food. Weaning children at 18 to 30 months - usually well into the next pregnancy. Weaning is done by trying to draw the infant's attention elsewhere or by sending him to grandmother.	Fetuses that die before birth are mourned and given funerals. Fallen fontanel "caida de la mollera" is caused by: the midwife not pressing preventively on the palate after birth, baby not wearing a cap, the nipple jerking out of the infant's mouth, or the infant falling out of bed. Symptoms are: sunken fontanel below the rest of the head with sunken eyes and refusal to suck. Treatment is holding the baby upside down over a pan of water and lowering his body until the fontanel is immersed three times or pressing very hard up on the palate with the thumb. The fontanel is then "held up" by a mixture of egg whites, rice and other herbs.

How Various Cultures View the Newborn - continued

Afro-American

Newborn feeding practices are varied. In the rural south breast feeding is preferred. In the north, many black mothers breast-feed their babies, however bottle feeding is very popular and is often done along with breast-feeding. Black Muslim and Orthodox Muslim women breast-feed, regardless of locale.

Evaporated milk formula is used more often than prepared formula. Prepared "baby food" and cereal are introduced early, often after the second or third week of life because the formula or breast-feeding is felt to be insufficient to satisfy the baby.

A "belly band" is often used to "prevent" umbilical hernia.

Availability is the predominant factor in determining whether or not circumcision is to be performed.

Indian

Bonding with the newborn occurs immediately.

Seven days to two weeks after delivery, the baby is taken to the medicine man for a cleansing ceremony. Entire body is dusted with eagle feathers and words of wisdom and songs take place. Ceremony is done to ensure a prosperous, healthy life for the newborn. White clay mixture is given (made with water) to the child, mother and father in order. Following the ceremony, the family is not permitted to eat meat or anything that has red color (prickly pear, saquaro fruit) for 4 days.

Mexican-American

Child weaned by being sent to grandmother's for three days - if not possible, mother puts chili or savila (Aloe vera) on her nipples.

Male infant is not circumcised, as the operation is believed to be disfiguring.

Girl babies' ears are pierced and the religious medals worn by the mother while pregnant are put around the baby's neck.

Belly band or fajita is kept on the abdomen until the navel is healed.

The infant is protected from the evil eye or mal ojo, by placing a seed near the baby. An infant gets mal ojo because an individual desires to hold the infant and doesn't. Infant becomes listless, eyes roll back. The treatment involves getting the person who wanted to touch the baby and didn't to hold the baby. Also prayers are said and the baby is massaged with oil.

How Various Cultures View the Newborn - concluded

Afro-American	Indian	Mexican-American
		Pujos or grunting is an illness manifested by grunting sounds and protrusion of the umbilicus. It is caused by a baby being handled by another woman who is menstruating or pregnant. The cure is to tie a piece of fabric from the woman's clothing around the baby's waist for 3 days. Then find a person named Juan who was born on St. John's day. This person must then donate a shred of clothing to tie around the infant. Colic is believed caused from a "cold" stomach and treated by vigorously rubbing the stomach and sometimes back and legs with warm olive oil. After this is done, one-half teaspoon of olive oil with a pinch of salt is given to the infant. "Empacho" is caused by food sticking to the abdominal wall. This condition is caused by an excessive intake of cheese and eggs. Symptoms include lack of appetite, abdominal pain, slight diarrhea, vomiting, fever, restlessness and crying. Treatment includes rubbing the stomach and pinching the back. Pulling up the skin by grasping small folds every third vertabrae and releasing it until three "pops" are heard signifys the dislodgment of the "empacho." Finally, an herbal tea with some cathartic qualities is given to "clean out the stomach."

TERMINOLOGY

unit 18

The following terms should be recognized and understood for the successful completion of Unit 18 of the Health Occupations Program. Study and learn their meanings.

ABORTION:	Termination of pregnancy before the fetus is viable; that is, before it can survive outside the uterus.
ABRUPTIO PLACENTAE:	Premature separation of a normally implanted placenta.
AMNIOCENTESIS:	Withdrawal of some of the fluid surrounding the fetus by inserting a sterile needle through the abdominal and uterine walls into the amniotic sac.
AMNION:	Inner membrane surrounding the fetus in the uterus. It contains the fluid in which the fetus lives.
ASCHEIM-ZONDEK TEST:	Pregnancy test. Urine from a woman suspected of being pregnant is injected into immature mice. If the test is positive, the mice develop lutein cells and hemorrhages in the ovaries within 100 hours after the urine is injected.
ASPHYXIA NEONATORUM:	Delayed or deficient respiration in newborn.
BAG OF WATERS:	Membranes and fluid surrounding the fetus in the uterus.
BALLOTTEMENT:	Term used in an examination in which the fetus can be pushed about in the pregnant uterus.
BRAXTON HICKS SIGN:	Painless uterine contractions occurring periodically throughout pregnancy.
BREECH DELIVERY:	Delivery in which the buttocks and/or one or both feet are presenting.
CAPUT SUCCEDANEUM:	Swelling on the head due to pressure from the cervix during labor.
CAUDAL ANESTHETIC:	A type of anesthetic resulting from the introduction of an anesthetic solution into the caudal canal.

TERMINOLOGY - continued

CEPHALHEMATOMA:	Swelling on one or both sides of the scalp due to bleeding between the bone and the periosteum.
CESAREAN SECTION:	Delivery of the baby through an incision into the abdominal wall and the uterus.
CHADWICK'S SIGN:	Purplish discoloration of the vagina, seen after the fourth week of pregnancy.
CHLOASMA:	Blotchy brown areas of pigmentation occurring on the face during pregnancy.
CHORION:	Outer membrane surrounding the fetus in the uterus.
CHROMOSOMES:	Rodlike structures occurring in pairs within the nucleus of each cell in the body; each species of animal and plant life has a specific number of chromosomes, which remains constant and is typical for that species.
CIRCUMCISION:	Removal of all or part of the foreskin of the penis.
CLEFT LIP:	Separation of the upper lip on one or both sides of the midline.
CLEFT PALATE:	Separation of the roof of the mouth.
COLOSTRUM:	Yellowish fluid secreted by the breasts during the latter part of pregnancy and for three or four days postpartum, when it is replaced by milk.
CONCEPTION: (FERTILIZATION)	Union of sperm from male with ovum from female; beginning of pregnancy.
CORPUS LUTEUM:	Yellowish body formed by the graafian follicle after the ovum is expelled.
COTYLEDON:	Segments or subdivision of the maternal side of the placenta.
DUCTUS ARTERIOSUS:	Blood vessel in the fetus connecting the pulmonary artery with the aorta.
DUCTUS VENOSUS:	Blood vessel in the fetus leading from the umbilical vein to the inferior vena cava.
DYSTOCIA:	Difficult, slow, or painful labor or delivery.
ECLAMPSIA:	Severe toxemia during pregnancy in which convulsions and/or coma occur.

TERMINOLOGY - continued

ECTODERM:	Outer layer of the three germ layers of the embryo; the skin, nervous system, nasal passages, crystalline lens of the eye, the pharynx and the mammary and salivary glands develop from the ectoderm.
ECTOPIC:	Out of place; ectopic pregnancy is a pregnancy occurring outside the uterus.
EFFACEMENT:	Thinning and shortening of the cervix.
EMBRYO:	Developing organism during the first 5 weeks of pregnancy; after that time, it is called a fetus.
ENDOMETRIUM:	Mucous membrane lining the uterus.
ENGAGEMENT:	Settling of the presenting part into the pelvis.
ENGORGEMENT:	Congestion of the breasts due to an increased blood supply and glandular activity in preparation for lactation.
ENTODERM:	Innermost layer of the three germ layers of the embryo; the alimentary tract, respiratory tract, bladder, pancreas and liver develop from the entoderm.
EPISIOTOMY:	Surgical incision of the perineum to permit delivery of the baby without tearing the area.
ERYTHROBLASTOSIS FETALIS:	Blood problem of the newborn due to the Rh incompatibility.
ESTROGEN:	Female sex hormone; secreted by the ovaries and by the placenta.
FALLOPIAN TUBES:	Two canals extending from either side of the fundus of the uterus.
FETUS:	Baby in the uterus from the fifth week of gestation until birth.
FIMBRIA:	Fringe, especially the fringelike end of the fallopian tube.
FONTANEL:	Space or "soft spot" at the junction of the bones in the baby's head; the diamond-shaped space in the front of the baby's scalp is known as the anterior fontanel; the triangular-shaped space at the back of the baby's head is known as the posterior fontanel.

TERMINOLOGY - continued

FORAMEN OVALE:	Opening in the partition between the right and left atria in the fetus.
FORESKIN:	Prepuce; fold of skin covering the glans penis.
FRIEDMAN'S TEST:	Pregnancy test. Urine from a woman suspected of being pregnant is injected into an unmated, mature rabbit twice daily for two days; the test is positive if fresh corpus luteum or hemorrhage occur in the ovaries of the rabbit.
FSH:	Abbreviation for follicle-stimulating hormone.
FUNDUS:	Upper, rounded portion of the uterus.
GAMETE:	Mature germ cell.
GENE:	Factor in chromosomes responsible for transmitting inherited traits or characteristics of individuals.
GESTATION:	Period of development of the young within the uterus.
GONADOTROPIN:	Substance having an affinity for or a stimulating effect on the gonads.
GOODELL'S SIGN:	Softening of the cervix.
GRAAFIAN FOLLICLE:	Small spherical bodies in the ovaries, each containing an ovum.
GRAVIDA:	Pregnant woman.
HEGAR'S SIGN:	Softening of the lower uterine segment.
HYDRAMNIOS:	Excessive amount of amniotic fluid.
IMPLANTATION:	Embedding of the fertilized ovum in the lining of the uterus.
INERTIA:	Inactivity; sluggishness of uterine contractions during labor.
INLET:	Upper limit of the pelvic cavity.
INVOLUTION:	Return of the uterus to its normal size and condition after delivery.
ISCHIUM:	Under part of each hip bone.

TERMINOLOGY - continued

IUD:	Intrauterine device used as a contraceptive.
LABIA MAJORA:	Folds of skin containing fat and covered with hair which form each side of the vulva.
LABIA MINORA:	Folds of delicate skin inside of the labia majora.
LABOR:	Series of processes by which the products of conception are expelled from the mother's body.
LACTATION:	Secretion of milk; the time or period of secreting milk.
LANUGO:	Fine, downy hair on the body of the fetus.
LH:	Abbreviation for luteinizing hormone.
LIGHTENING:	Sensation of decreased abdominal distention that is produced by the descent of the uterus into the pelvic cavity, which occurs two or three weeks before the onset of labor.
LINEA NIGRA:	Dark line appearing on the abdomen and extending from the pubis toward the umbilicus of the pregnant woman.
LOCHIA:	Vaginal discharge expelled following delivery and several days thereafter.
MECONIUM:	Dark green or black substance found in the large intestine of the fetus or newly born infant; first stool of newborn.
MESODERM:	Middle layer of the three germ layers of the embryo; muscles, bones, circulatory system, reproductive system, connective tissue, kidneys, and ureters develop from the mesoderm.
MILIA:	Tiny, white spots on the skin of the nose and forehead of the newborn, usually caused by clogged oil glands of hair follicles.
MISCARRIAGE:	Abortion.
MOLDING:	Shaping of the baby's head to adjust itself to the size and shape of the birth canal.
MULTIGRAVIDA:	Woman who has been pregnant several times.
MULTIPARA:	Woman who has borne several children.
NEONATAL:	Newborn.

TERMINOLOGY - continued

OPHTHALMIA NEONATORUM:	Infection of the eyes of the newborn caused by gonococcus.
OVARY:	Female sex gland.
OVULATION:	Rupturing of a graafian follicle and expelling of mature ovum.
OVUM:	Female germ cell, or sex cell.
OXYTOCIC:	Agent that stimulates the uterus to contract.
PARA:	Refers to past pregnancies that have produced a viable infant, whether or not the infant is dead or alive at birth.
PARAMETRIUM:	Outer serous layer of the uterus, continuous with the peritoneum.
PARTURITION:	Process of giving birth.
PELVIMETRY:	Measurement of the pelvis.
PERINEUM:	Area between the vagina and the anus.
PHIMOSIS:	Tightness of the foreskin of the penis.
PHOTOTHERAPY:	Treatment to prevent or dissipate jaundice by means of exposure to light.
PITOCIN:	Agent that stimulates the uterus to contract.
PLACENTA:	Circular, flat vascular organ present in the gravid uterus, which establishes communication between the fetal and the maternal blood supplied through the umbilical cord. It is a part of the afterbirth cast out following delivery.
PLACENTA PREVIA:	Placenta implanted in the lower uterine segment so that it adjoins or covers the internal os of the cervix.
POSITION:	Relation of a certain point on the presenting part of the fetus to the mother's pelvis.
POSTPARTUM:	After delivery or childbirth.
POSTTERM INFANT:	Infant born after 42 weeks gestation.

TERMINOLOGY - continued

PREECLAMPSIA:	Disorder encountered during pregnancy or early in the puerperium characterized by elevated blood pressure, edema and albuminuria.
PREMATURE INFANT:	Not mature; born before the 38th week of gestation.
PRESENTATION:	That part of the fetus lowest in the mother's pelvis.
PRETERM INFANT:	Infant born before 37 weeks gestation.
PRIMIGRAVIDA:	Woman who is pregnant for the first time.
PRIMIPARA:	Woman who has given birth to her first child.
PROGESTERONE:	Hormone secreted by the corpus luteum that prepares the endometrium for the reception and development of the fertilized ovum.
PROLACTIN:	Hormone from the anterior lobe of the pituitary gland that stimulates lactation in the mammary glands.
PUBIS:	Pubic bone forming the front of the pelvis.
PUDENDUM:	External genitalia.
PUERPERIUM:	Period from delivery until the reproductive organs return to their normal condition, about six weeks.
QUICKENING:	First movements of fetus felt by the mother.
RH FACTOR:	A term applied to an inherited antigen in the human blood.
RUBELLA:	German measles. May be injurious to fetus if contracted by the mother in first trimester of the pregnancy.
SHOW:	Blood-tinged mucus discharge expelled from the vagina before or during labor.
STRIAE GRAVIDARUM:	Shiny, reddish lines found upon the abdomen, thighs and breasts during pregnancy.
SYMPHYSIS PUBIS:	Union of the pubic bones, which are connected to each other by interarticular cartilage.
THRUSH:	An infection of the mouth of the newborn caused by the fungus candida albicans.

TERMINOLOGY - concluded

TOXEMIA:	Disorders encountered during pregnancy or early in the puerperium that are characterized by one or more of the following signs: elevated blood pressure, edema, albuminuria and in severe cases convulsions and coma.
TRIMESTER:	Three-month periods into which pregnancy is divided.
UMBILICAL ARTERIES:	Arteries that form part of the umbilical cord; carry "used" blood from fetus to the placenta.
UMBILICAL CORD:	The cord connecting the placenta with the umbilicus of the fetus; made up of the two umbilical arteries and the umbilical vein, surrounded by a mass of gelatinous tissue called "Wharton's jelly."
UMBILICAL VEIN:	Vessel in the umbilical cord through which oxygenated blood is carried from the placenta to the fetus.
UTERUS (WOMB):	Hollow, muscular organ in the female in which the fetus is housed and nourished during its development until birth.
VAGINA:	Canal in the female extending from the vulva to the cervix of the uterus.
VERNIX CASEOSA:	Cheesy substance covering the skin of the fetus.
VERTEX:	Top of the head.
VIABLE:	Able to live, especially relating to a fetus that has developed enough to live outside the uterus.
VILLI:	Vascular projections on the chorion of the early embryo.
VULVA:	External genitals of the female.
WHARTON'S JELLY:	Jelly-like mucous tissue surrounding the vessels in the umbilical cord.
ZYGOTE:	Cell resulting from the union of two gametes.

Unit 19 covers the elementary principles involved in the administration of medications and in weights and measures. The medications commonly used in the treatment of disease are discussed in terms of action, side effects and dosages.

PHARMACOLOGY

PART I

Module A - Review of Arithmetic of Dosage and Solution
Module B - Introduction into the Administration of Medications
Module C - Calculating the Correct Rate for IV's

PART II

Module A - Medications Used in the Treatment of Musculoskeletal Disorders
Module B - Medications Used in the Treatment of Cardiovascular and Hematologic Disorders
Module C - Medications Used in the Treatment of Respiratory Disorders
Module D - Medications Used in the Treatment of Gastrointestinal Disorders
Module E - Medications Used in the Treatment of Urological Disorders
Module F - Medications Used in the Treatment of Disorders Involving the Endocrine System
Module G - Medications Used in the Treatment of Reproductive Disorders
Module H - Medications Used in the Treatment of Disorders Involving the Nervous System

Module I - Medications Used in the Treatment of Disorders of the Ear and Eye
Module J - Medications Used in the Treatment of Neoplastic Disorders
Module K - Medications Used in the Treatment of Infectious Disorders
Module L - Medications Used in the Treatment of Allergic Disorders

Post Tests: Part I
1. Module A
2. Module B

Part II
1. Module A
2. Module B
3. Module C
4. Module D
5. Module E
6. Module F
7. Module G
8. Module H
9. Module I
10. Module J
11. Module K
12. Module L

When you have completed the learning activities and are ready for a test or wish to challenge a test, please see your instructor.

Suggested Resources

The following texts and audiovisuals will supplement the learning materials for this unit. If you are unable to locate these materials, your instructor will assist you.

1. Falconer, Mary, Robert Patterson and Edward Gustafson. Current Drug Handbook, 1980-82. W.B. Saunders and Company, Philadelphia.

2. Physicians' Desk Reference, Medical Economics Co., Oradell, NJ, 29th Edition, 1981.

3. Skelley, Esther. Medications and Mathematics for the Nurse. Delmar Publishers, Albany, New York, 12205, 1980.

4. The National Formulary, American Pharmaceutical Assn., Latest Edition, Washington.

Audiovisual

Fundamentals of Nursing Injection and Technique Series, J.B. Lippincott Co., Philadelphia, PA.

unit 19

PHARMACOLOGY

Module A, Part I - Arithmetic of Dosage and Solutions

RATIONALE

As a practical nurse you will be expected to prepare and administer medications.

In preparing medications, three systems of weights and measures are used: the apothecary, the metric and household measures. Since physicians sometimes order medication following one system but it comes from the pharmacy labeled in another, you will need to learn how to convert from one system to another. You must also learn how to calculate and give the dosage ordered by the physician. Remember, errors in calculating medication can disasterously affect patients.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Convert weights and volume into the metric, apothecary and household measurements.
2. Demonstrate your ability to convert and calculate dosages.

LEARNING ACTIVITIES

Directions: All the information needed to complete this module is included. Read the information, memorize the conversion tables, and then work the problems in the exercises. Please do not ask help from other students; do your own work. Your instructor WANTS to help you. Do not try to work all of these problems in one day. (Take three to five days for this work.)

GOOD LUCK!!

ACTIVITY #1. Weights and Measures

Directions: Read the following.

Medications are measured in the apothecary system, the metric system and the standard household system of measurement. Sometimes you will be required to convert the dosage of a medication from one system of measurement to another; therefore, it is helpful to know the equivalent measurements for the three systems. However, you can always CALL THE PHARMACIST if you are unsure about a correct dosage.

Apothecaries' System

The word "apothecary" is an ancient word meaning pharmacist or druggist. The units of measure used in this system are also ancient.

LEARNING ACTIVITIES - continued

For weighing solids the units progress from the smallest to largest as follows: (Note the symbols)

smallest ⟵ GRAIN DRAM ʒ OUNCE ℥ POUND ⟶ largest

The grain unit was originally based on the average weight of a grain of wheat.

When a dosage is written in grains, the amount is expressed in roman numerals with a dot above each. For example, one (1) is written $\overline{\dot{i}}$, four (4) is written $\overline{\dot{i}\dot{v}}$. The number always follows the symbol. An example is gr $\overline{\dot{i}\dot{i}\dot{i}}$ or gr $\overline{\dot{i}}$. Write the following problems in the apothecary system. If you have any problems, see your instructor.

2 gr ____________________

6 gr ____________________

A part of a grain is written as a fraction. For example, 1/4, 1/6, 1/12. Write 1/4 of a grain like this: gr 1/4.

The symbol ss represents the fraction 1/2. For example, the fraction 1/2 is written $\overline{ss}$. A whole number and the fraction 1/2 is written (1 1/2) $\overline{\dot{i}ss}$.

Complete these problems.

2 1/2 ____________________

5 1/2 ____________________

If you have any problems, see your instructor.

The units for the measurement of fluids are from smallest to largest as follows: (Note the symbols.)

smallest Minim (m) Fluidram ʒ Fluidounce ℥ Pint Quart Gallon largest
⟵ ⟶

A minim is approximately equal to a drop.

Metric System

The metric system was invented by the French.

The unit of weight is the gram. The symbol for gram is gm. A milligram is one-thousandth of a gram. Its symbol is mg or mgm.

The unit of liquid measure is the liter. The symbol is "l." A liter is equal to 1000 milliliters. Its symbol is ml. 1000 ml = 1000 cc (ml and cc are the same thing) 1000 ml = 1 qt.

LEARNING ACTIVITIES - continued

The metric system uses decimals to indicate fractions or parts of numbers. For example, 2/10 is written .2, 4/100 is written .04. In medicine, it is customary to round off all answers after the second decimal. When multiplying or dividing, you must carry your answer out to the third place. If the third decimal number is five or more, increase the second decimal number by one. If the third decimal is less than five, drop it. For example, .326 is written .33 and .122 is written .12.

Round off the following numbers:

.166 ____________________

.233 ____________________

.125 ____________________

If you have any questions, ask your instructor.

ACTIVITY #2. Review of Multiplication and Division of Decimals

Directions: Multiply the following problems. Be sure your decimal points are in the right place. Round off to the second place. If you miss more than one of these problems, consult with your instructor. Proceed to the division problems. Answers can be found on page 12. Check your answers before you go on to the division problems below.

1. .5 X 10
2. .001 X 1000
3. .5 X 3.5
4. .01 X 3.5
5. 2.02 X .05
6. .7 X .03
7. 0.2 X 2.02
8. .10 X 5
9. 6 X .75

Directions: Divide the following problems. Be sure your decimal points are in the right place. Round off to the second decimal. If you miss more than three problems, consult with your instructor. If you miss fewer than three, proceed to the next page. Answers can be found on page 12.

1) $.5\overline{)43.5}$

2) $.007\overline{)37.6}$

3) $.300\overline{)1.5}$

4) $2\overline{).5}$

5) $29\overline{).174}$

6) $35\overline{)2.38}$

7) $3\overline{)1.8}$

8) $5\overline{)1.2}$

9) $2.5\overline{)1}$

10) $.5\overline{)25}$

11) $.8\overline{)640}$

12) $.07\overline{)21}$

13) $1.1\overline{)22}$

14) $2\overline{).1}$

15) $.3\overline{).24}$

LEARNING ACTIVITIES - continued

ACTIVITY #3. Conversion Tables

Directions: Memorize the following. You will need to learn these well.

1000 mg = 1 gm
60 mg = 1 gr
15 gr = 1 gm

1000 cc = 1 liter
1 cc = 1 ml
1 gtt = 1 m
16 m = 1 cc or 1 ml (15 m = 1 cc or 1 ml is occasionally used)
16 gtt = 1 cc or 1 ml (15 gtt = 1 cc or 1 ml is occasionally used)

4 cc = 1 dram or 1 teaspoon
15 cc = 1 tablespoon
1 oz = 30 cc
1 l = 1 qt

Suggestion: Make flash cards to assist in memorizing conversion tables.

ACTIVITY #4. Pharmacology Problems

Directions: Study the following.

This formula is one method you can use to solve your pharmacy problems.

$$\frac{\text{Dose on Hand (Known)}}{\text{Dose Desired (Unknown)}}$$

Illustration:

Problem: The doctor orders 0.24 gm of a drug, but you only have the drug in mg. Change 0.24 gm to mg.

Known: You already know that:

1000 mg = 1 gm

Let "x" = the unknown

LEARNING ACTIVITIES - continued

Set up your problem like this:

$$\frac{\text{Dose on hand is 1000 mg} = \text{1 gm}}{\text{Dose desired is "x" mg} = \text{0.24 gm}}$$

NOTICE: That mg are under mg and gm are under gm

Like quantities must always be on the same side of the equals (=) sign.

Solution: $\frac{1000 \text{ mg} = 1 \text{ gm}}{\text{"x" mg} = 0.24 \text{ gm}}$

Cross multiply:

$$1000 \times 0.24 = 240$$
$$1 \times \text{"x"} = 1 \text{"x"}$$
$$1x = 240$$

Divide by the number accompaning the "x." Thus:

(answer) 240 divided by 1 = 240 mg

Now try working the following problems. Use your formula and take no short cuts.

Memorize

1000 mg = 1 gm

60 mg = 1 gr

15 gr = 1 gm

*Use Flashcards

Problems (show your work). Round off to the second place, e.g. 3.665 = 3.67. If you have any difficulty working these problems, consult your instructor. Answers can be found on page 12.

1. 3.6 gm = _____ mg
2. 50 gm = _____ mg
3. 20 mg = _____ gm
4. 2.0 mg = _____ gm
5. 45 mg = _____ gr
6. 1.7 gm = _____ gr
7. 35 mg = _____ gr
8. 7.5 gr = _____ gm
9. 1/3 gr = _____ mg
10. 0.3 gm = _____ gr

LEARNING ACTIVITIES - continued

Work these review problems. Round off to the second place.

1. 2 gm = ____ mg
2. 30 mg = ____ gr
3. 60 gr = ____ gm
4. gr $\overline{V}$ = ____ gm
5. 70 gr = ____ gm
6. 2/3 gm = ____ gr
7. 1/6 gr = ____ mg
8. 20 mg = ____ gm

Memorize these equivalents.

1000 cc = 1 liter (ℓ)
1 cc = 1 ml
1 gtt = 1 m
16 m = 1 cc or 1 ml *Use Flashcards
16 gtts = 1 cc or 1 ml
2 pts = 1 qt or 1 ℓ (liter)
500 cc = 1 pt

Now work the following problems. (Show your work) Round off to the second place. Answers can be found on page 13.

9. 2 cc = ____ m
10. 50 m = ____ cc
11. 0.4 cc = ____ m
12. 1.25 ml = ____ gtts
13. 300 cc = ____ liters
14. 2.7 liters = ____ ml = ____ cc
15. 1.4 cc = ____ m
16. 0.6 cc = ____ gtts
17. 0.9 ml = ____ m
18. 2 gtts = ____ m

LEARNING ACTIVITIES - continued

Work the following review problems. Round off to the second place.

1. .24 gm = ____ mg

2. 70 mg = ____ gm

3. .3 gm = ____ gr

4. 45 m = ____ ml

5. 2.2 cc = ____ gtts

Memorize these equivalents and symbols.

4 cc = ʒi̇ or 1 tsp

15 cc = 1 tbsp

℥i̇ = 30 cc

8 = 1

1 liter = 1 quart

2 pts. = 1 quart or 1 ℓ

500 cc = 1 pint

ʒ is the symbol for dram

℥ is the symbol for ounce

Roman numerals are frequently used in pharmacology.

Now work the following problems. (Show your work) Round off to the second place. Answers can be found on pages 13 and 14.

6. 13 cc = ____ drams

7. 8 cc = ____ tsp = ____ ml

8. ʒ1.2 = ____ cc

9. ℥iss = ____ cc = ____ m

10. 20 m = ____ cc = ____ dr

11. ℥.7 = ____ ml

12. .6 cc = ____ gtts

13. ℥iss = ____ ml

14. 18 m = ____ ml

15. ℥i̇ = ____ tablespoons

LEARNING ACTIVITIES - continued

16. ʒ ss = ____ teaspoons

17. 25 gtts = ____ cc

18. ʒ ii = ____ teaspoons

In the following problems assume that both the dose on hand and the dose desired are in the metric system (or both in the apothecary system). Set up the problems as you have been, using the formula:

$$\frac{\text{Dose on Hand}}{\text{Dose Desired}}$$

If dose on hand and dose desired are not in the same system, you must first convert the numbers to the same system.

Example: Your physician orders aspirin gr X. Your bottle is labeled 0.3 gm per tab. You would give ________________ tabs.

Change gr to gm

15 gr = 1 gm
x gr = .3 gm

(Cross multiply)
15 gr x .3 gm = 1 gm x "x" gr

1 "x" = 4.5

4.5 rounded off = 5 gr per tab

Now substitute gm for gr and solve

$$\frac{5\text{ gr} = 1\text{ tab}}{10\text{ gr} = \text{"x" tab}}$$

Cross multiply
"x" tab x 5 gr = 1 tab x 10 gr

$$\frac{5x = 10}{x = 2\text{ tabs}}$$

You would give 2 tabs.

Complete the following problems showing all your work. Round off to the second place.

1. Lanoxin is labeled 0.25 mg per tablet. The physician orders 0.125 mg. You will give ______________ tablets.

2. Demerol 35 mg is ordered. You have on hand a vial containing 50 mg/cc. You will give ______________ cc.

3. Atropine is labeled gr 1/150/cc. The physician orders gr 1/200. You will give ______________ cc.

4. ACTH is labeled 40 U/cc. Give 35 U. This will be ______________ cc.

LEARNING ACTIVITIES - continued

5. Aspirin is labeled 5 gr per tablet. The physician ordered gm 0.9. You will give ____________ tablets.

6. Vistaril is labeled 25 mg per 2 cc. The physician ordered 35 mg. You would give _____________ cc.

7. Larodopa is labeled 1 gm/tab. The physician ordered 1500 mg. You will give _______________ tablets.

The answers to these problems are on page 13. See your instructor if you are having difficulty. If not, go to the next set of problems.

Keep going. You're doing well!!! Round off to the second place.

1. Vitamin B_{12} is labeled 1000 meq/cc. The physician ordered 500 meq. You will give ________ cc. This is the same as _______m.

2. Dilantin is labeled 125 mg/5 cc. The physician ordered 0.1 gm. You will give _________ cc. This is equal to __________ ml.

3. Lanoxin is labeled .05 mg/1.5 cc. The physician ordered 0.25 mg. You will give your patient ____________ cc.

4. L-Dopa is labeled 500 mg per tablet. The physician orders 2 gm. You will give your patient ____________ tablets.

5. Mr. Rodriquez is being discharged. He is to receive 0.8 cc digitalis, liquid, at home. You will tell his daughter to give him ___________ gtts.

6. Anna Belle is receiving 4 cc of elixir of Benadryl q.i.d. You will tell her to take ________ tsp. _______ times a day at home.

7. Ms. Mariott is taking ℥ss of KCl q.d. You will tell her husband to be sure that she takes _______ tbsp. _____________ a day when she goes home.

If you have found these problems difficult, work additional problems on the following pages. If your work was accurate, you're ready for your test. Good Luck! Answers to the above exercise are on page 14.

ACTIVITY #5. Optional Problems

Directions: If you wish additional practice you may work the following problems. This is not required. Round off to the second place. Answers can be found on page 14.

1. Carlos was to receive 15 cc Phenergan with codeine syrup as an antitussive. How much is this in ml? __________________

2. A patient is to receive 500 ml of IV solution. What part of a liter is this? ______________

3. Mary is to receive 1 tbsp. of cough syrup. How many cc's will she receive? _____________

LEARNING ACTIVITIES - continued

4. Sally is asked to administer 2 tsp. of potassium chloride to a patient. How many cc's will she give? ____________

5. You are to receive 30 cc of Ipecac syrup. How many tsps. is this? ____________

6. One quart (qt.) equals ____________ liters.

7. One pint (pt.) equals ____________ liters.

8. If the dose of milk of magnesia is 15 ml, how many fluid ounces would be necessary to give 10 doses? ________________

9. If there are 7 1/2 grains of drug in each ampule of the preparation, how many grams of the drug are in 4 ampules? _____________

10. If the dose of a certain medication is 0.5 gm and the tablets are marked 7 1/2 grains, how many tablets will be given for each dose? ___________

11. If the dose of a medication is 4 ml, how many fluid ounces would you order from the pharmacy in order to have 60 doses? _________________________________

12. If a physician orders 15 mg of a drug and the preparation comes marked "tablets gr 1/8," how many tablets or what part of a tablet will you give? ____________

13. George received .005 gm of codeine for cough. How much codeine did George receive expressed in mg? ____________

14. Phenergan .025 gm was ordered as a preoperative medication to decrease secretions. Express .025 gm as milligrams. _______________

15. Wendy received 50 mg of ephedrine for her asthma. How much is this in gm? ____________

Conversions

16. _______ mg = 1 gm

17. 1000 ml = _____ cc

18. 1 pint = _____ l

19. 60 mg = _____ gr

20. 1 cc = _____ m

21. 8 ʒ = _____ fl. ℥

22. _______ gm = 50 mg

23. 0.5 liters = _____ cc

24. 30 gm = _____ gr

25. gr 1/6 = _____ mg

LEARNING ACTIVITIES - concluded

Proportions

26. To give 0.1 gm of Aureomycin using 50 mg tablets, use: ____________________

27. How many 5 mg tablets of prednisone would you use to give 0.005 gm? ________

28. To give strychnine sulfate gr 1/50 from tablets gr 1/30, use:

____

29. To give gr $\overline{xxx}$ of sodium bromide from a solution containing 1 gm in 4 cc use:

____

30. To give chloral hydrate gr $\overline{xv}$ from a solution containing 0.6 gm in 4 cc use:

____

31. How would you give 7500 units of antitoxin from a 40 m ampule containing 10,000 units? ________________________________

The following problems are not required work. Do them if you need more practice.

1. 1 gtt = _____ m
2. 1 ml = _____ gtt
3. 1/6 gr = _____ mg
4. 15 ml = _____ tablesp.
5. ʒ $\overline{ss}$ = _____ tsp.
6. 7 1/2 = _____ gr
7. 32 m = _____ ml

8. Your patient, Mr. Spanos, has an order for Compazine 1/12 gr p.r.n. for nausea. He is having his first emesis since surgery. When you prepare the medication, you find you have an ampule of Compazine labeled 20 mg per 2 cc. How many cc's will the dose be?

9. Your patient is in pain from his cholecystectomy of yesterday. He has an order to receive 7 1/2 mg of morphine sulfate q 3-4 hr. p.r.n. for pain. You have an ampule labeled morphine sulfate 15 mg per 1 1/2 cc. How many cc's of that ampule will your dose be?
How much will you waste?

10. Your patient is to receive an antibiotic, Loridine 250 mg q.i.d. You receive a vial of 1/2 gm of Loridine in 2.5 cc. How many cc's will you give in your dose? ____________ How many cc's of air will you inject into the vial before you withdraw the medicine? ________________________________

11. Mrs. Clark was admitted with a peptic ulcer and she is to receive Pro-Banthine 30 mg b.i.d. You have a bottle labeled Pro-Banthine 1/2 gr per tablet. How many tablets will you give? ________________________________

ANSWERS

ACTIVITY #2

Multiplication Problems

1. 5
2. 1
3. 1.75
4. .04
5. .10
6. .02
7. .40
8. .50
9. 4.50

Division Problems

1. 87
2. 5371
3. 5
4. .25
5. .01
6. .07
7. .6
8. .24
9. .4
10. 50
11. 800
12. 300
13. 20
14. .05
15. .8

ACTIVITY #4

Page 10

1. 3,600 mg
2. 50,000 mg
3. .020 gm
4. .002 gm
5. .75 gr
6. 25.5 gr
7. .58
8. 1/2
9. 20
10. 4.5

ANSWERS

Page 11

1. 2000 mg
2. .5 gr
3. 4 gm
4. .33
5. 4.7
6. 10
7. 10
8. .02
9. 32 m
10. 3.12
11. 6.4 m
12. 20 gtts
13. .3 L
14. 2700 ml = 2700 cc
15. 22.4
16. 9.6
17. 14.4
18. 2

Pages 12 and 13

1. 240 mg
2. .07 gm
3. 4.5 gr
4. 2.8
5. 35.2
6. 3.25
7. 2 tsp = 8 ml
8. 4.8 cc
9. 45 cc = 720 m
10. 1.25 cc = .31 dr
11. 21
12. 9.6
13. 6 ml
14. 1.1 ml
15. 2 Tbsp
16. 4 tsp
17. 1.6 cc
18. 2 tsp

ACTIVITY #4

Page 15 and 16

1. .5 or 1/2 tab
2. .7 cc
3. .75 cc
4. .88 or .9
5. 3 tabs
6. 2.8 cc
7. 1.5 tabs

ANSWERS

Page 17

1. .5 cc or 8 m
2. 4 cc or 4 ml
3. 7.5 cc
4. 4 tabs
5. 13 gtts
6. 1 tsp - 4 times a day
7. 1 tbsp - 1 time a day

ACTIVITY #5

1. 15 ml
2. 1/2 1.
3. 15 cc
4. 8 cc
5. 8 tsp
6. 1 1.
7. .5 1
8. ʒ v
9. 2 gm
10. 1 tab
11. ʒ viii
12. 2 tab
13. 5 mg
14. 25 mg
15. .05 gm
16. 1000 mg
17. 1000 cc
18. ss or 1/2
19. 1
20. 16
21. 1 ʒ
22. .05 gm
23. 500 cc
24. 450 gr
25. 10 mg
26. 2 tabs
27. 1
28. 3/5 .6
29. 8 cc
30. 6.7 cc or 6.6 cc
31. 30 m

ANSWERS - concluded

ACTIVITY #5 (continued)

Page 21 and 22

1. 1 m
2. 16 gtts
3. 10 mg
4. 1 tbsp
5. 4 tsp
6. .125 gr
7. 2 ml
8. 1/2 cc
9. Give .75 cc. Waste .75 cc
10. 1.25 cc 1.25 cc
11. 1 tab

unit 19

PHARMACOLOGY

Module B, Part I - Administration of Medications

RATIONALE

The administration of medications is one of the biggest responsibilities assigned to the practical nurse. Therefore, you need to learn the correct procedure for giving all types of medications.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify terms commonly used to describe types of medications and methods of administration.
2. Identify common medical abbreviations.
3. Identify types of syringes and needles.
4. Identify the angles used in giving various types of injections.
5. Identify the safe injection sites.
6. Demonstrate at least one intramuscular injection.
7. From given situations demonstrate setup of patient medicines.

LEARNING ACTIVITIES

Now you are ready to do the activities in Module B. In addition to the material in this module you will view the film strips by Lippincott, Injection Series. Get busy!

ACTIVITY #1. Abbreviations

Directions: Be certain that you know these abbreviations.

Apothecary and metric system abbreviations used in the administration of medications.

cc - cubic centimeter

gm - gram

gtt - drop

l - liter

m - minim

mg or mgm - milligram

ml - mililiter

pt - pint

qt - quart

ʒ - dram

℥ (oz.) - ounce

LEARNING ACTIVITIES - continued

Roman numeral abbreviations used in the administration of medication.

$\overline{\dot{i}}$ - one

$\overline{\dot{i}\dot{i}}$ - two

$\overline{\dot{i}\dot{i}\dot{i}}$ - three

$\overline{\dot{i}v}$ - four

V - five

$V\overline{\dot{i}}$ - six

X - ten

XV - fifteen

Other abbreviations used in the administration of medications.

a.c. - before meals

ad. lib. - freely as desired

b.i.d. - two times a day

c or $\bar{c}$ - with

caps. - capsule

elix. - elixir

gtt - a drop

h - hour

hs- hour sleep

IM - intramuscular

IV - intravenous

LD - left deltoid

LT - left thigh

LUOQ - left upper outer quadrant

noct. - in the night

o.d. - right eye (Note: O.D. is the abbreviation for "every day")

o.s. - left eye

o.u. - both eyes

p.c. - after meals

LEARNING ACTIVITIES - continued

p.o. - oral

per - through or by

p.r.n. - when required

q.i.d. - four times a day

q.s. - as much as required (quantity sufficient)

RD - right deltoid

RT - right thigh

RUOQ - right upper, outer quadrant

s or $\bar{s}$ - without

s.o.s. - if necessary

ss or $\overline{ss}$ - a half

stat. - immediately

sub. Q. - subcutaneous

t.i.d. - three times a day

tr. or tinct. - tincture

ung - ointment

% - percent

Directions: Now see if you remember! Fill in the blanks. Answers can be found in the previous pages. Ask your instructor if you need help.

Write the abbreviations for the units of measurement given below.

1. dram ____________________
2. ounce ____________________
3. milligram ____________________
4. grain ____________________
5. pint ____________________
6. minim ____________________
7. quart ____________________
8. milliliter ____________________
9. cubic centimeter ____________________

LEARNING ACTIVITIES - continued

Write the correct definition beside each abbreviation.

1. a.c. ______
2. q.h. ______
3. b.i.d. ______
4. ss or $\overline{ss}$ ______
5. ung. ______
6. q.s. ______
7. ad. lib. ______
8. o.d. ______
9. $\dot{\bar{\imath}}$ ______
10. c or c̄ ______
11. q.i.d. ______
12. stat. ______
13. p.r.n. ______
14. t.i.d ______
15. s or s̄ ______
16. o.s. ______
17. p.o ______
18. $\overline{\dot{\imath}\dot{\imath}}$ ______
19. o.u. ______
20. V ______

Directions: Interpret the following orders in the space provided. Answers can be found in the preceding information.

1. Phenergan c codeine fl. ʒ$\dot{\bar{\imath}}$ ______
2. Milk of magnesia fl.ʒss q.d. ______
3. Atropine gr 1/150 IM 1 h. preoperatively. ______
4. Phenergan 25 mgm IM p.r.n. for nausea. ______
5. SSKI gtts X p.c. at HS. ______
6. Terpin hydrate 10 cc p.o. q4h p.r.n. ______
7. Morphine sulfate 10 mg sub. Q q4 hrs. p.r.n. for pain. ______
8. Dilantin 100 mg p.o., caps.$\dot{\bar{\imath}}$ q8h. ______
9. Give 1 cc (40 mg) Garamycin q8h IM. ______
10. Epinephrine o.1 mgm (of 1:1000 strength) sub Q stat! ______
11. Apply Maxitrol opthalmic ung. to OU. ______
12. Fluids p.o. ad. lib. ______
13. Seconal 100 mg. qhs. p.r.n. ______

LEARNING ACTIVITIES - continued

14. Aspirin gr X p.o. p.c. ______________________________
15. If pt. is dyspneic during noc. call house physician. ______________
16. Ipecac syrup fl.℥ss q8h p.o. ______________________________
17. PT voiding in q.s. ______________________________

ACTIVITY #2. General Principles and Terminology

Directions: Read the following.

A drug is a substance used in the diagnosis, treatment or prevention of disease.

Pharmacology is the study of drugs. A pharmacist can always be consulted if you have any questions concerning medications or if you are unsure of your own answer or unable to find an answer.

Toxicology is the study of poisons.

Sources of Drug Information

1. The Pharmacopeia of the U.S. of America (U.S.P) is an official publication on drugs and dosages.
2. The National Formulary (N.F.) serves as a supplement to the U.S.P.
3. Physician's Desk Reference (PDR) is most commonly seen in hospitals and in doctors' offices. However, it is not an official publication since it is published by the pharmaceutical manufacturers.

Site of Drug Action

1. Local action - the effect of the drug is at the site of application. E.g. the effect of an antiseptic on a small abrasion.
2. Systemic action - the drug acts after being absorbed into the bloodstream.

Factors That Affect Medications

1. Age - the very young or old may respond differently to dosages.
2. Weight - a light individual may show greater response than a very heavy individual.
3. Sex - women sometimes respond differently from men.
4. Disease - the presence of disease and severity of symptoms may call for an adjustment in dosage.

LEARNING ACTIVITIES - continued

5. Environmental factors - climate, altitude, season and temperature.

6. Time of administration - medicine is more slowly absorbed after a meal.

7. Route of administration - the intravenous dose is often smaller than the subcutaneous dose.

8. Excretion.

9. Drug interaction - can increase the effect.

Types of Medications

Drugs have a variety of properties and uses. How they are used often determines their form. Drugs are usually in a liquid form or a solid form.

The route of administration is the method by which the drug is taken and absorbed by the body.

I. Liquid Forms

   A. Demulcent - an agent that soothes and softens the skin or mucous membrane at the application site. E.g. honey, olive oil.

   B. Elixir - a solution containing alcohol, sugar and water most frequently used as flavoring agents.

   C. Emollient - a soothing agent such as olive oil applied to the skin.

   D. Emulsion - a suspension of fat in water. E.g. Haley's M.O.

   E. Liniment - a mixture of drugs with oil, soap, water or alcohol used externally.

   F. Lotion - a preparation containing suspended materials used for soothing local application.

   G. Solution - a dissolved liquid preparation.

   H. Suspension - a solution in which ingredients separate on standing.

   I. Syrup - a drug dissolved in water with sugar and flavoring added.

   J. Parenteral - refers to all drugs administered with a needle - IM, IV, sub. Q and intradermal.

LEARNING ACTIVITIES - continued

II. Solid Forms

A. Capsule - a drug in a gelatin container.

B. Enteric-coated tablet - tablet coated with a substance that dissolves in the intestine where the drug is released.

C. Ointment - a mixture of drugs with a fat for external application.

D. Pill - a powdered drug mixed with a liquid and rolled into round or oval shape.

E. Scored pill - a pill that is marked into halves or quarters for easy breaking.

F. Spansule - a capsule enclosing delayed-action medications.

G. Sublingual - a drug placed under the tongue.

H. Suppository - a drug in a firm base, such as cocoa butter, molded for insertion into rectum or vagina.

I. Tablet - a powdered drug compressed in a mold to obtain its shape.

Directions: Define the following terms in the space provided to the right. Answers can be found in the preceding information.

1. Aspiration: ____________________
2. Capsule: ____________________
3. Demulcent: ____________________
4. Elixir: ____________________
5. Emulsion: ____________________
6. Enteric-coated: ____________________
7. Lotion: ____________________
8. Scored: ____________________
9. Solution: ____________________
10. Spansule: ____________________
11. Sublingual: ____________________
12. Suppository: ____________________
13. Parenteral: ____________________

LEARNING ACTIVITIES - continued

ACTIVITY #3. Principles of Drug Administration

Directions: Read the following important principles of drug administration.

1. Read each medical card or medex carefully. Make certain that you can read clearly and interpret each entry.

2. When calculating doses, be certain that your answer is correct. When in doubt, check with other licensed personnel.

3. If you think that a maximum dose has been exceeded or an incorrect dose has been ordered, check the physician's orders and check with the nurse in charge or the pharmacist.

4. Always read the label on the bottle three times: (1) before taking the bottle from the shelf, (2) before pouring the medicine, (3) before returning the bottle to the shelf.

5. Never use medicines from an unmarked container.

6. Never leave medicines that you have poured unless they are labeled.

7. If the medication is in the form of a suspension or emulsion, shake the bottle well.

8. Never pour a medicine back into a bottle unless it is individually wrapped and labeled.

9. Always re-cap or cover medicine containers immediately after pouring medicine.

10. Always check the patient's name on his/her arm band and on medication card or medex.

11. The nurse should remain with the patient until the medication is taken.

12. Never allow a patient to administer medicine to another patient.

13. Do not give medications prepared by another nurse.

14. Never chart a medication as given until the patient has actually swallowed it. If the patient fails to receive the medicine, indicate in the nurse's notes why it was omitted.

15. Always chart all medications you give. Chart the time given, route given and injection sites.

16. Always date when new vials are opened and check date of expiration.

LEARNING ACTIVITIES - continued

NOTE: The LPN should always know the name of the drug, its safe and effective dose, route given, action taken, toxic and side effects. An unfamiliar drug should be looked up in a PDR or other reference book.

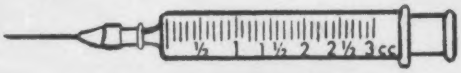
Briefly summarized: YOU MUST GIVE THE RIGHT MEDICATION TO THE RIGHT PATIENT, AT THE RIGHT TIME, IN THE RIGHT AMOUNT, BY THE RIGHT ROUTE.

ACTIVITY #4. Parenteral Medications

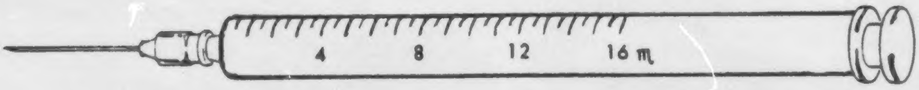
Directions: Study the following information and diagrams for giving parenteral medications.

I Syringes

A. 2 1/2 cc or 3 cc syringes: These are the most frequently used syringes. They are all marked the same. You will see in the following diagram that each mark on the syringe equals .1 cc. Show your instructor how much 0.6 cc's would be.

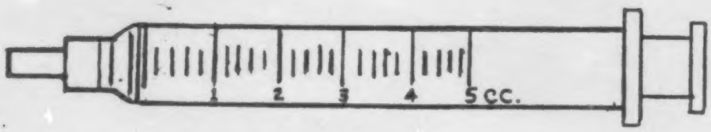


The reverse side of this syringe is marked in "minims." (See diagram) Each mark on this side equals 1 minim. Show your instructor how much 12 m would be.



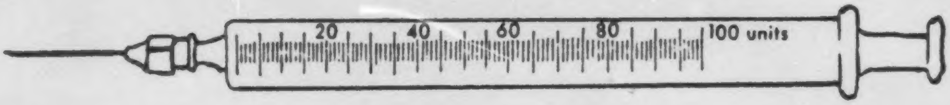
NOTE: Be sure to use the correct side of the syringe when you draw up medications.

B. 5 cc syringe: You will notice in the following diagram that each mark on this syringe equals .2 cc's. Show your instructor how much 2.6 cc's would be.

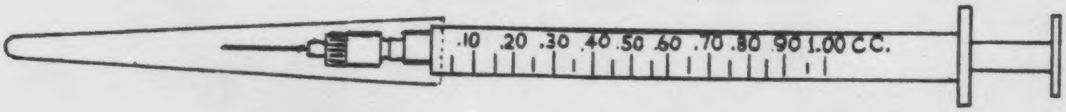


LEARNING ACTIVITIES - continued

C. Insulin syringe: The type of syringe must match the type of insulin. Thus, if you are giving U 100 insulin, you will use a U 100 syringe. You will notice that each mark equals 2 U. In the following diagram, show your instructor 40 U.



D. T.B. syringe: This is a 1 cc syringe used to give small doses in which great accuracy is desired.

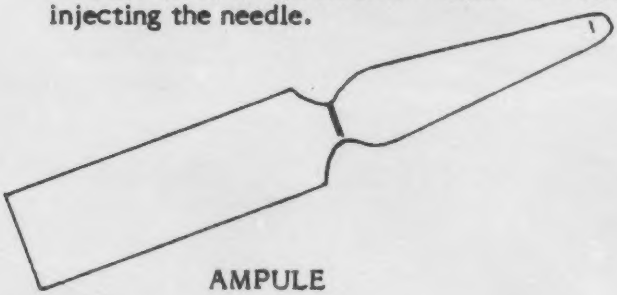


II. Needles - The diameter is indicated by the gauge number. The larger the number, the smaller the diameter of the needle. The length is also indicated. For example, a 22 gauge, 1-inch needle is frequently written "22-1." Ask your instructor to identify the parts and sizes of needles you may be using.

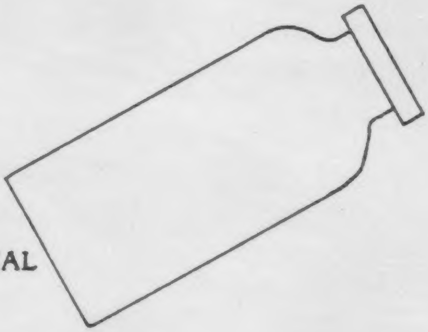
III. Solutions - Parenteral drugs must be readily soluble, sterile, rapidly absorbed and nonirritating.

A. Ampule - Single dose, all glass container. No need to inject air. (Ask your instructor to demonstrate opening a single-dose ampule.)

B. Vial - Multiple dose, rubber-stopper bottle. Inject as much air as the amount of fluid withdrawn. Clean the rubber stopper with alcohol before injecting the needle.



AMPULE



VIAL

IV. Injections

A. Subcutaneous injections: Small amounts of medication are given under the skin. The needle is inserted at a 45° angle. ∠ 45° . The needle size is usually a 25-5/8 or 25-1/2. Diagram I shows the five injections sites for "sub.q." injections. These should be rotated so that the same site is not used for two successive injections.

NOTE: Never give more than 2 cc's sub. q. in one injection.

LEARNING ACTIVITIES - continued

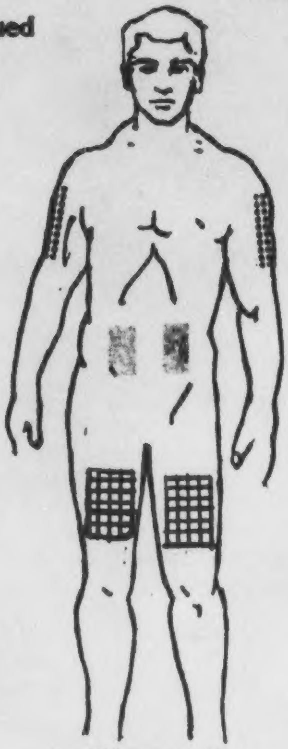


Diagram I

Injection Sites for Subcutaneous Injections

These five areas, used in any sequence, are acceptable as a plan of rotation.

B. Intramuscular injections. IM injections are made into the muscle. Larger doses can be given by this method than by sub.q. The needle is inserted at a 90° angle 90°. The most commonly used needles are 23 - 1", 23 - 1 1/2", 22 - 1", 22 - 1 1/2". Areas commonly used for injection are the deltoid, lateral side of thigh (vastus lateralis), upper part of thigh (quadriceps) and the gluteal. (See Diagram II) CAUTION: An injection incorrectly given could cause paralysis to the radial nerve. The sciatic nerve might also be damaged causing paralysis by an incorrectly given injection. Since the gluteus is not well-developed enough in children, it is safer to give injections in the thigh. Never give more than 3 cc IM in one injection.

C. Intradermal injections - are given just under the skin. They are used for skin tests. Very small amounts of fluid are given. The needle used is a 25 -1/2" or 26 - 1/2" that is inserted at a 15° angle 15°. They are most frequently given in the forearm.

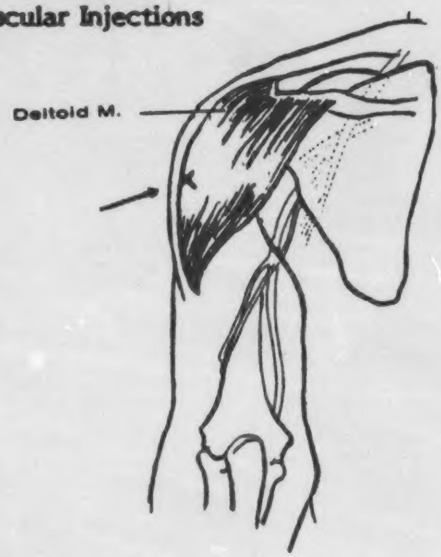
Check with your instructor when drawing up multiple drugs. Example: Demerol, Visterol and Atropine. Each situation will differ; you may be using a multi-dose vial, ampule or tubex. Remember, your instructor is your resource.

When withdrawing medication for an injection, many nurses will leave .2 cc to .5 cc of air in the top of the syringe. This allows the needle to clear and seal the injection site. Check with your instructor before using this method.

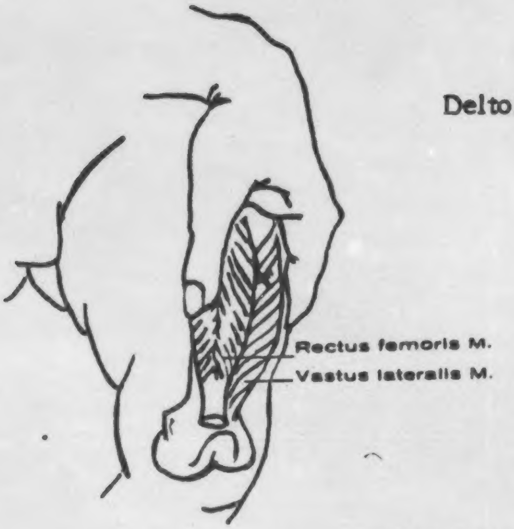
LEARNING ACTIVITIES - continued

Diagram II

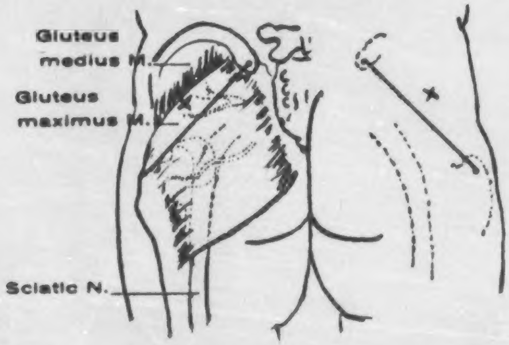
Intramuscular Injections



Deltoid Region


Rectus femoris M.
Vastus lateralis M.

Vastus Lateralis Region


Gluteus medius M.
Gluteus maximus M.
Sciatic N.

Gluteal Region

LEARNING ACTIVITIES - continued

V. Procedure for giving IM or sub. q. injections.

   A. Use medication card or medex.

   B. Take medication that is in syringe to patient.

   C. Locate anatomical landmarks.

   D. Expose injection site fully.

   E. Cleanse the injection site with alcohol.

   F. Draw the tissue taut over site.

   G. Inject needle quickly at appropriate angle. Do not insert to the hub of the needle.

   H. Draw plunger back into the barrel and observe to see if blood enters the syringe. (This is known as aspirating.)

   I. If blood enters the syringe, withdraw the needle and discard the needle and syringe.

   J. Prepare the medication again, using another syringe and needle and choose another site for the injection.

ACTIVITY #5. Injections

Directions: View the film strips Fundamentals of Nursing Injection and Technique Series by J. B. Lippincott Co., Philadelphia.

ACTIVITY #6. Demonstration

Directions: Now demonstrate to your instructor your ability to:

1. Correctly identify various syringes with which you are provided.

2. Correctly identify needle guage and shaft length.

3. Select appropriate needles for giving:

   a. IM

   b. Sub. q. injections

4. Identify the correct angle for giving:

   a. IM

   b. Sub. q.

   c. Intradermal injections

LEARNING ACTIVITIES - concluded

5. Withdraw the following amounts of solution into 3 cc, T.B. and 5 cc syringes:

   a. 0.4 cc
   b. 0.6 cc
   c. 1/2 cc
   d. 6 m
   e. 16 m
   f. 1 ml

6. Given an ampule and a vial you will:

   a. Identify each correctly.

   b. Demonstrate removal of medication from each.

7. Using a classmate you will:

   a. Indicate three appropriate sites for giving sub. q. injections.

   b. Indicate four appropriate sites for giving IM injections.

   c. Identify abbreviations used in charting these sites.

   d. Identify nerves that could be injured if IM is incorrectly given.

   e. Discuss maximum amounts of medication to be injected at one time and rotation plan for repeated injections.

Now, ready or not, you will give your classmate .2 cc of normal saline IM! Then you should be ready to take your test. Good Luck!

unit 19

PHARMACOLOGY

Module C, Part I - Calculating the Correct Rate for IVs

RATIONALE

The practical nurse is often assigned the responsibility of calculating the rate of flow of IV fluids; that is, the correct number of drops per minute according to the total amount of fluid per number of hours ordered by the physician. This is an important responsibility! Regulating an IV incorrectly can have serious (even fatal) results for a patient. Therefore, you need to learn how to calculate correctly.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Demonstrate your ability to solve given intravenous solution problems by:
    a. Correctly calculating how many cc per hour.
    b. Correctly calculating how many cc per minute.
    c. Correctly calculating how many drops per minute.
2. Using the problems given in this module, demonstrate how to accurately mark the IV bottle/bag for the number of hours it should take to infuse.
3. Using the problems in this module, demonstrate how to regulate the drops per minute.
4. Demonstrate marking the I & O sheet with the amount of solution infused.
5. Demonstrate your ability to solve problems related to calculating IV flow that are similar to, but not the same as, the problems given in this module. Also demonstrate or describe how you would regulate the drops per minute and record amounts on the I & O sheet, using the problems given by your instructor.
6. In a given assignment in the clinical area, demonstrate the procedure for timing an IV bottle/bag and regulating drops. Include:
    a. Correctly calculating how many cc per hour.
    b. Correctly calculating how many cc per minute.
    c. Correctly calculating how many drops per minute.
    d. Correctly marking the IV bottle/bag for the number of hours it will take to infuse.
    e. Correctly regulating the drips per minute.
    f. Correctly marking the I & O sheet with the amount of solution infused during your shift.

LEARNING ACTIVITIES

Directions: All the information needed to complete this module is included in this module. If you need to review care for a patient receiving intravenous therapy, read and review Unit 8, Module G-3. You should also review the Trainex, Nursing Care During Intravenous Therapy. If you have any questions, be sure to ask your instructor for help. There will be no posttest for this module.

ACTIVITY #1. General Information About IVs

Directions: Read the following.

The physician designates the type and the amount of IV and the length of time it is to run. This determination is made on the basis of laboratory tests and the general condition of the patient. When you read the orders, you must then mark the IV bottle or plastic bag correctly for the amount of time it should take to infuse and regulate the number of drips per minute after the IV is hung. The L.P.N. may add bottles/bags of IV solution that do not contain medication to an IV that has already been started. But she must ask a registered nurse to prepare and hang any bottles/bags that contain a medication. Medications are ordered by the physician. As an L.P.N., you will be responsible for regulating the number of drips and reporting when an IV bottle/bag needs changing.

Some important points to remember in calculating the rate per minute is that regular adult IV drip chambers give 15 drops per cc; the blood infusion sets give 10 drops per cc and (in peds or elsewhere) a microdrip chamber gives 60 drops per cc. The following picture of an IV setup shows an adult drip chamber. This module will explain how to regulate an IV using an adult drip chamber.

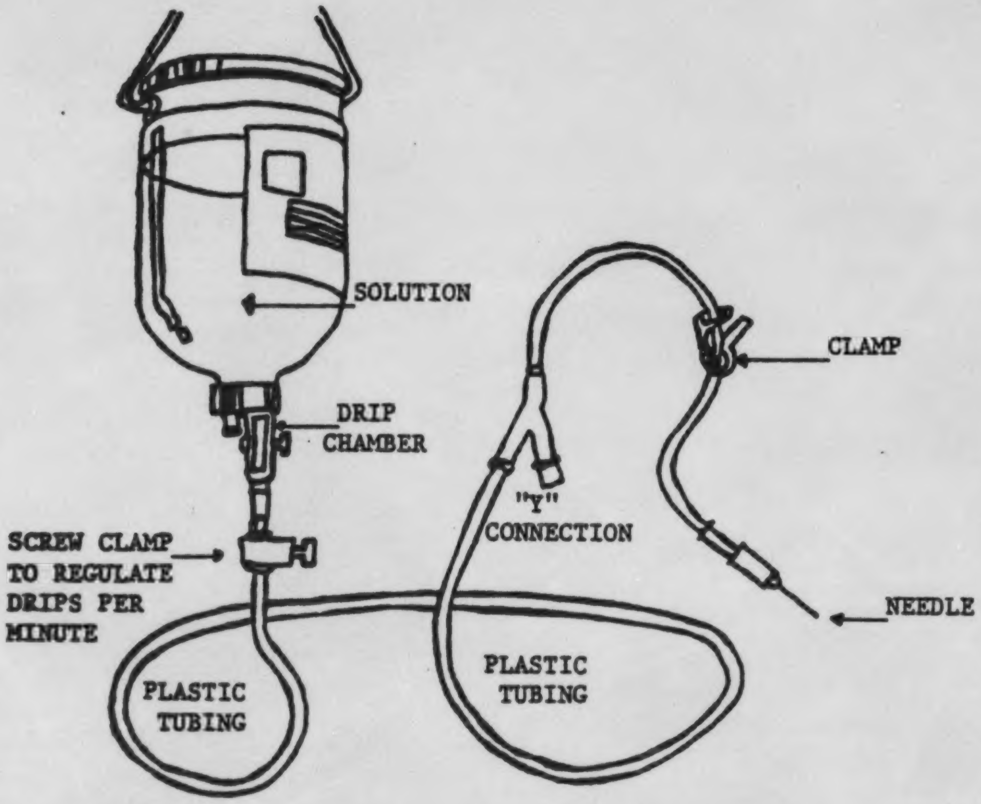
*Drip factors do vary:

Adult 15 gtts = 1 cc
Blood infusion 10 gtts = 1 cc
Microdrip 60 gtts = 1 cc

*Remember these may also vary according to type of equipment used.

LEARNING ACTIVITIES - continued

Intravenous (IV) Setup


SOLUTION
DRIP CHAMBER
SCREW CLAMP TO REGULATE DRIPS PER MINUTE
PLASTIC TUBING
"Y" CONNECTION
CLAMP
NEEDLE
PLASTIC TUBING

NOTE: Many IV solutions now come in plastic bags.

LEARNING ACTIVITIES - continued

ACTIVITY #2. Introduction to Calculations

Directions: Read the following.

The physician orders the type and the amount of IV fluid needed by the patient and also the length of time needed for the prescribed amount of fluid to infuse (run in). The physician may order enough fluids for eight hours, for 12 hours or for 24 hours.

A registered nurse adds medications to an IV and starts it. An L.P.N. watches the IV for correct flow, adds bottles/bags as ordered (without medication) to the already started IV's, and assumes the responsibility for regulating flow (cc per minute) for all observed IV's. This is true whether the IV contains medications or not.

Stop for a minute and think about the responsibilities the L.P.N. has. What does it tell you? One: You are responsible to check that the IV is running properly; that it has not stopped, that it is not going too fast or too slow. Two: You are responsible for seeing that the next bottle/bag is hung correctly when the present IV is empty or nearly empty (if medications are involved, get the R.N. to change the bottle/bag. Remember, the drip chamber should never be allowed to become empty.) Three: You are responsible for marking the bottle you hang according to the ordered amount per hour and regulating the flow to maintain this schedule.

Do your responsibilities end there? No!! What about the patient? Even though this module discusses calculating the rate of flow of IV's, never forget the patient receiving that IV. So you are also responsible for checking the site of infusion, the condition of the tubing, the comfort of the patient and the patient's response to the IV. Do you remember the complications that can accompany an IV infusion? If you are not absolutely sure that you remember, review Unit 8, Module G-3.

Now, a few words about IV bottles/bags. IV bottles/bags come in different sizes; namely, 250 cc, 500 cc, 1000 cc. The last two (the liter and half-liter sizes) are most commonly used in a regular IV infusion in an adult. Most hospitals have paper tapes to place on a running IV bottle/bag so that the nurses can more easily calculate the rate of flow and can check the amount of fluid already infused. When you put a tape on a bottle/bag, be sure you have the right size tape for the right size bottle/bag. If you are not familiar with the marking tapes in your hospital, ask your instructor to show you some and to answer any questions you may have about them. The paper tapes will be explained further in Activity #5.

ACTIVITY #3. Calculating IV Rates

Directions: Learn the steps to be followed while calculating correct rates for IV's.

Step #1: Read the following order.

"Give 1000 cc 5% D/W in 10 hrs."

Step #2: Ask yourself:

"How many cc will I need to give in one hour if I have a total of 1000 cc to give in 10 hours?"

LEARNING ACTIVITIES - continued

Now, simply divide 1000 by 10 as follows:

```
       100      = 100 cc per hour
 10 )1000
     1000
     ----
```

Step #3: Ask yourself:

"If I give 100 cc in one hour or 60 minutes, how many cc will I give in one minute?"

Simply divide 100 by 60 as follows:

```
       1.66     = 1.66 cc per minute
 60)100.00
    60
   ---
    400
    360
    ---
     400
     360
     ---
      40
```

Step #4: Ask yourself:

"If 1.66 cc are given per minute, how many drops per minute is this?"

To find out, simply multiply 1.66 by 15
(Remember there are 15 drops in 1 cc.)

```
   1.66
     15
  -----
   8 30
  16 6
  -----
  24.90   = 25 drops per minute!
```

LEARNING ACTIVITIES - continued

Step #5: Mark the IV bottle at 100 cc per hour and regulate the rate at 25 drops per minute!!

This is a summary of the steps.

1. First, calculate how many cc per one hour. (Divide amount of cc by time specified.)
2. Second, calculate how many cc per one minute. (Divide cc per hour by 60 because there are 60 minutes in one hour.)
3. Third, calculate how many drops per minute. (Multiply cc per minute by 15 because there are 15 gtts. per 1 cc.)

ACTIVITY #4. Problems in Calculations

Directions: Complete the following and check your answers below and on the following page. (Do the problems before checking your answers.)

Problem A:

"Give 1000 cc 5% D/W in 5 hours."

You will give ____ cc per hour.
(Refer to Step #2)

You will give ____ cc per minute.
(Refer to Step #3)

You will give ____ drops per minute.
(Refer to Step #4)

Answers to Problem A

Steps

1. "Give 1000 cc 5% D/W in 5 hours."
2. How many cc per hour?

$$5\,\overline{)\,1000}\ = 200$$

200 cc in one hour

5) 1000
1000

3. How many cc per minute?

3.33
60) 200.00 cc in one minute
180
200
180
20

LEARNING ACTIVITIES - continued

4. Multiply:

$$\begin{array}{r} 3.33 \\ \times\ 15 \\ \hline 1665 \\ 333 \\ \hline 4995 \end{array}$$

or 50 gtts. per minute

5. What would Step #5 be?

Problem B:

"Give 1000 cc 5% D/W in 6 hours."

You will give ____ cc per hour.
(Refer to Step #2)

You will give ____ cc per minute.
(Refer to Step #3)

You will give ____ drops per minute.
(Refer to Step #4)

Check your answers with the correct answers below.

Answers to Problem B

Steps

1. "Give 1000 cc 5% D/W in 6 hours."

2.

$$\begin{array}{r} 166 \\ 6\ )\overline{1000} \\ \underline{6} \\ 40 \\ \underline{36} \\ 40 \\ \underline{36} \\ 4 \end{array}$$

cc per hour

LEARNING ACTIVITIES - continued

3. 2.76 cc per minute

60) 166
120
460
420
400

4.

2.76
15
1380
276
41.40 or 41 gtts. per minute

5. What would Step #5 be?

Problem C

"Give 500 cc N.S. in 8 hours."

You will give ___ cc per hour.
(Refer to Step #2)

You will give ___ cc per minute.
(Refer to Step #3)

You will give ___ drops per minute.
(Refer to Step #4)

Check your answers with the correct answers below and on page 9.

Answers to Problem C

Steps

1. "Give 500 cc N.S. in 8 hours."
2. How many cc per hour?

62.5 or 63 cc in one hour

8)500
48
20
16
40

LEARNING ACTIVITIES - continued

3. How many cc per minute?

$$\begin{array}{r} 1.05 \\ 60\ \overline{)\ 63.0} \\ 60 \\ \hline 300 \\ 300 \\ \hline 0 \end{array} \quad \text{cc in one minute}$$

4. Multiply:

$$\begin{array}{r} 1.05 \\ \times\ 15 \\ \hline 525 \\ 105 \\ \hline 15.75 \end{array} \quad \text{or 16 gtts. per minute}$$

Problem D

"Give 2500 cc 5% D/W in 24 hours."

You will give ____ cc per hour.
(Refer to Step #2)

You will give ____ cc per minute.
(Refer to Step #3)

You will give ____ drops per minute.
(Refer to Step #4)

Check your answers with the correct answers below and on page 10.

Answers to Problem D

Steps

1. "Give 2500 cc 5% D/W in 24 hours.
2. How many cc per hour?

$$\begin{array}{r} 104 \\ 24\ \overline{)\ 2500} \\ 24 \\ \hline 100 \end{array} \quad \text{cc per hour}$$

LEARNING ACTIVITIES - continued

3. How many cc per minute?

$$\begin{array}{r} 1.73 \\ 60\ )\,\overline{104.00} \\ \underline{60} \\ 440 \\ \underline{420} \\ 200 \end{array}$$

or 1.7 cc in one minute

4. How many drops per minute?

$$\begin{array}{r} 1.73 \\ \underline{\times\ 15} \\ 865 \\ \underline{173} \\ 25.95 \end{array}$$

or 26 gtts. per minute

5. What would Step #5 be?

Problem E

"Give 1000 cc 5% D/W in 8 hours."

You will give ____ cc per hour.
(Refer to Step #2)

You will give ____ cc per minute.
(Refer to Step #3)

You will give ____ drops per minute.
(Refer to Step #4)

Check your answers with the correct answers below.

Answers to Problem E

Steps

1. "Give 1000 cc 5% D/W in 8 hours."
2. How many cc per hour?

$$\begin{array}{r} 125 \\ 8)\overline{1000} \\ \underline{8} \\ 20 \\ \underline{16} \\ 40 \end{array}$$

cc per hour

LEARNING ACTIVITIES - continued

3. How many cc per minute?

cc per minute

4. How many drops per minute?

or 31 gtts. per minute

5. What would Step #5 be?

Remember how to calculate these rates of flow. You will come across them again.

Alternate Method

There is another way to calculate the IV rate. You may use whichever method is best for you. The formula is:

$$\frac{\text{cc/hr x drip factor (gtts = 1 cc)}}{\text{60 (min/hr)}}$$

To find cc/hr, divide the number of hours the IV is to run into the amount of solution. Example:

1,000 cc/5% D/W to run 10 hrs.

Divide 10 into 1,000 $\begin{array}{r}100\\ 10\overline{)1{,}000}\end{array}$

Your answer is 100cc/hr.

LEARNING ACTIVITIES - continued

When using this method you must also remember the different drip factors. They are:

Adult	15 gtts = 1cc
Blood infusion	10 gtts = 1 cc
Microdrip	60 gtts = 1 cc

Remember these may vary with the type of equipment used.

Insert the appropriate figure into the formula and compute your IV rate.

Let's use the example of 1,000cc/5% D/W to run 10 hrs. Find the drip rate. You are using an adult setup.

From your answer in the first example, you know you have 100cc/hr to be infused, therefore:

$$\frac{100\text{cc/hr} \times 15\text{ gtts}}{60\ (\text{min/hr})}$$

$$100 \times 15 = 1500$$

$$1{,}500 \div 60 = 25\text{ gtts/min}$$

Compare this problem to the one on page 11, which shows the same problem worked with the other method of calculating IV rates. Remember both are correct methods. Use whichever is best for you.

ACTIVITY #5. Marking Tapes on Bottles/Bags

Directions: Study the following.

Different drug companies and different hospitals may use slightly different tapes. Make sure you are familiar with the ones used in your hospital.

LEARNING ACTIVITIES - continued

Patient: John Jones

Room: 210

Date: 3/17/86

TIME

1400

Drops/min.

100 ml. ___

200 ml. ___

300 ml. ___

400 ml. ___

500 ml. ___

600 ml. ___

700 ml. ___

800 ml. ___

900 ml. ___

1000 ml. ___

Name of Solution: 5% Dextrose in N.S.

Bottle Number: 1.

Drug Added: None

Notice in the sample that you are required to fill in the starting and finishing time, the name of the patient, solution, bottle number, date, room number and medications added (remember, this will be done by the R.N.).

The tape is applied as soon as the IV is started, not before. Notice that the tape reads: "Place arrows at solution level after aspirating tubing." Drops per minute are also to be filled in. Now all that calculating you have just learned helps you. You have figured out the number of gtts. per minute by calculating from the physician's orders.

An added "help" is given you with the section, "infusion rate/hour." If you have calculated correctly and the IV is running at the proper number of drops per minute (therefore also correct number of cc per minute), the arrows in the infusion section of the tape will tell you if all is going according to schedule. If this 1000 cc bottle runs for 16 hours, how much would be gone in 4 hours?

How many cc per hour? = 62.5 cc per hr.

```
     62.5
16 )1000.
     96
     40
     32
```

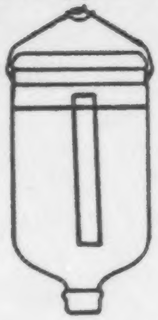
In four hours, it would be 4 times 62.5.

```
 62.5
x   4
-----
250.0   cc
```

LEARNING ACTIVITIES - continued

Now, look on your tape. If you figured right, where should the four-hour arrow be? At 250 cc. When your IV has run for 4 hours, it should show that 250 cc have run in.

Remember that the tape is applied to the bottle/bag after it is inverted with the big arrow at the fluid level.



Fluid level when IV has just been started.

The tape put on with long arrow at that level.

Let's complete the calculation started on the previous page.

You know how many cc per hour (62.5).

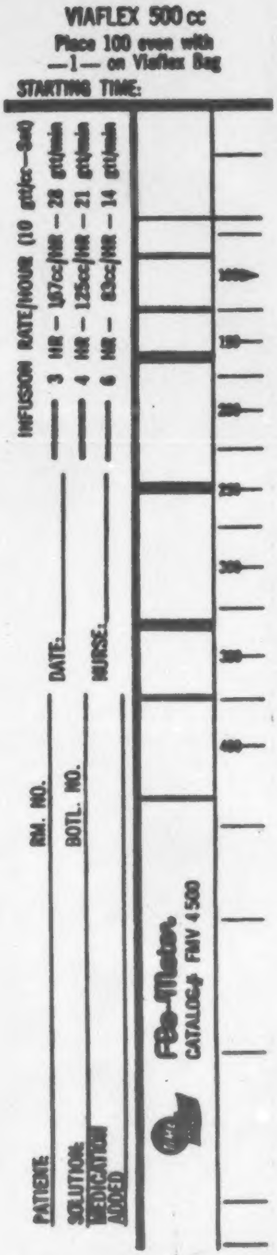
How many cc per minute? ___

How many gtts. per minute? ___

Did you get it right?

Figure it out with your instructor to be sure.

LEARNING ACTIVITIES - continued


VIAFLEX 500 cc
Place 100 even with
—1— on Viaflex Bag
STARTING TIME:
INFUSION RATE/HOUR (10 gtt/cc—Set)
—— 3 HR – 167cc/HR – 28 gtt/min
—— 4 HR – 125cc/HR – 21 gtt/min
—— 6 HR – 83cc/HR – 14 gtt/min
DATE:
NURSE:
RM. NO.
BOTL. NO.
PATIENT:
SOLUTION:
MEDICATION ADDED
Flo-Meter
CATALOG # FMV 4500
100
150
200
250
300
350
400

Here is a sample for a 500 cc bottle/bag. The same information is requested on the tape. If a patient has a 500 cc bottle/bag that is to run for 16 hours, how much should be gone in 4 hours?

_______ = cc per hour

16) 500

In 4 hours, it would be:

x 4

_____ cc.

Is your amount the same as the amount the tape says should have run in 4 hours? If it is not the same, why is it not the same?

Complete the above problem.

How many cc per minute? ___

How many gtts. per minute? ___

LEARNING ACTIVITIES - continued

If each of these bottles/bags is to run for 10 hours, how many cc per hour?

______ cc per hour for 1000 cc/____ cc per hour for 500 cc.

Where should the tape arrows be after 4 hours?

For the 1000 cc bottle, at ____ cc.

For the 500 cc bottle, at ____ cc.

How many cc per minute for each bottle?

____ cc for 1000 cc.

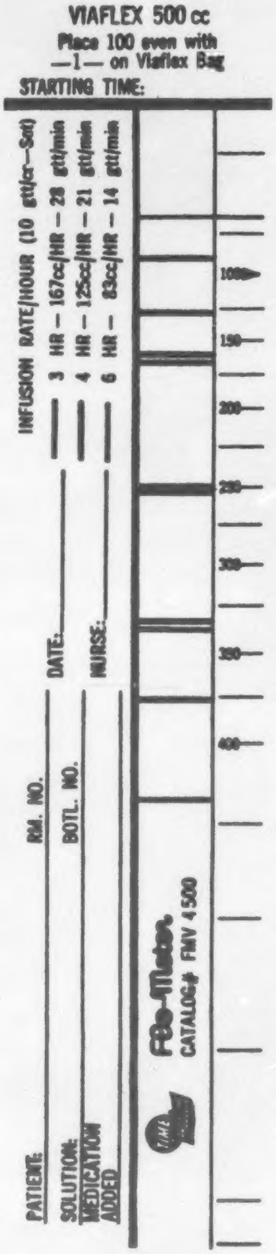
____ cc for 500 cc.

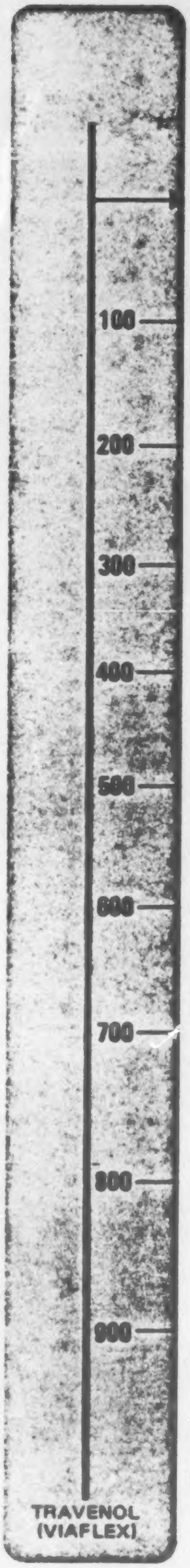
How many gtts. per minute for each bottle?

____ gtts. for 1000 cc.

____ gtts. for 500 cc.

Check your answers with your instructor.


VIAFLEX 500 cc
Place 100 even with
—1— on Viaflex Bag
STARTING TIME:
INFUSION RATE/HOUR (10 gtt/cc—Set)
3 HR – 167cc/HR – 28 gtt/min
4 HR – 125cc/HR – 21 gtt/min
6 HR – 83cc/HR – 14 gtt/min
PATIENT:
RM. NO.
DATE:
SOLUTION:
BOTL. NO.
NURSE:
MEDICATION ADDED
Flo-Meter
CATALOG# FMV 4500
100
150
200
250
300
350
400


100
200
300
400
500
600
700
800
900
TRAVENOL
(VIAFLEX)

LEARNING ACTIVITIES - continued

ACTIVITY #6. Recording IV Fluids on I & O Sheet

Directions: Read the following.

You have already learned to record intake and output in Unit 8, Module C. Review that module if necessary. Now you must learn how to record intake of IV fluids. Each hospital has an I & O sheet. Be sure you are familiar with the one used at your hospital.

As you know, the I & O sheets are divided into 8-hour sections that correspond to the 8-hour shift usually worked by the nursing personnel. IV fluids are recorded as intake for each shift, that is, the amount infused during that shift. The amount may be a whole bottle/bag, a part of a bottle/bag or even parts of two bottles/bags. The intake is recorded when a bottle/bag is emptied and/or at the end of the shift. Therefore, if you are working the day shift and your patient has an IV started at 0800, which empties at 1400, and another bottle/bag is added, when and what would you record as intake? You would record the entire amount of the solution absorbed from the first bottle/bag 0800 plus the type of solution and the amount in the bottle/bag of the new (or second) bottle/bag. At the end of your shift, you would record how much of the solution was gone from the second bottle/bag and, in the first square of the next shift, record the type of solution and the amount left in the bottle/bag. (A sample of this is included later in this activity.)

There is a special section on the I & O sheet for IV fluids. These fluids are not recorded in the same columns as oral fluids! Some hospitals may want you to record the amount of IV fluid infused each hour. Be sure you know (or find out) what is expected in the hospital where you work.

The tape you fastened to the bottle in Activity 5 will show you how much is gone from the bottle/bag. The fluid level in the bottle/bag will match one of the lines on the tape. Now look at those tapes again. If the fluid level is at 300, how much fluid has your patient had? How much is left in the bottle/bag? The I & O sheet wants you to record both of these amounts. See the sample below.

TIME	IV Solution	Amt. in bottle	Absorbed	Oral	
				Kind	Amt. cc
0600-0700					
0700-0800					
0800-0900					
0900-1000					
1000-1100					
1100-1200					
1200-1300					
1300-1400					
	8 hr. TOTAL				

LEARNING ACTIVITIES - continued

You must record the type of solution, the amount in the bottle/bag and the amount absorbed. Obviously the amount in the bottle/bag and the amount absorbed should add up to the total bottle/bag size. In the question on the preceding page, if the fluid line is at 300, that is the amount absorbed and 700 cc is left in the bottle/bag unabsorbed.

Whenever a new bottle/bag is hung, the nurse who hangs it records the type of IV solution and the amount in the bottle/bag on the I & O sheet. At the end of a shift, the amount absorbed is recorded as intake. The type of solution and the amount left in the bottle/bag is recorded in the first box for the next shift. (Obviously these two should total the amount in the original bottle/bag.)

Suppose your patient had an IV of 5% D/W going when you first come on duty in the morning. The night shift had recorded the intake for that shift and written in the amount left (and the type of solution) in the first square for your shift. The bottle/bag showed 550 cc gone, leaving 450 cc at the beginning of your shift. The patient was to receive this bottle in 8 hours and it was started at 0100.

Calculate: How many cc per hour? 125 cc per hour
8)1000

How long has it been running? From 0100 to 0600 (when the day shift starts on the I & O sheet). It has been running for five hours so the patient received 625 cc since 0100. Is that right? Yes. So the rate of the drops is correct. Since it is "on schedule," when would you expect this bottle/bag to run out? You would expect it to run for 3 more hours or until 0900. Another bottle/bag is ordered for this patient of 1000 cc 5% D/W to run for 8 hours. What will you do at 0900? You will calculate the dosage.

How many cc per hour?

```
  125
8)1000  cc per hour
  8
  20
  16
   40
```

How many cc per minute?

```
    2.08   cc per minute
60)125
   120
     500
     480
```

How many drops per minute?

```
   2.08
   x 15
   1040
   208
  31.20   or 31 gtts. per minute
```

LEARNING ACTIVITIES - continued

At 0900 you fill out the tape (remember this is bottle/bag #2) and fix it to the inverted bottle/bag with the arrow pointing to the fluid line. When the first bottle/bag runs out, you attach and hang the second bottle/bag. You adjust the rate to 31 gtts. per minute. You record the 375 cc intake from the previous bottle/bag on the intake sheet for 0900 and record that you have hung the next bottle/bag. Assuming that you regulated the drops correctly and the drip remains steady, what would you record when you go off-duty at 1400? You would record the amount of fluid taken, in this case, 625 cc. You would then total the entire amount absorbed during your shift. You would also record, in the first square of the next shift, the type of solution and the amount left in the bottle/bag. See the sample below.

TIME	IV Solution	Amt. in bottle	Absorbed	Oral	
				Kind	Amt. cc
0600-0700	5% D/W	375			
0700-0800					
0800-0900					
0900-1000	5% D/W	1000	375		
1000-1100					
1100-1200					
1200-1300					
1300-1400			625		
	8 hr. TOTAL		1000		
1400-1500	5% D/W	375			

When you first see your patient, what if the IV is running too fast or too slow for your calculation of how it should be running? What would you do? You would correct the rate of flow to the correct number of drops per minute. You would record the actual amount absorbed at the time the bottle/bag empties. Always record what has actually occurred whether it comes out right or not according to total hours per bottle. Do not set the IV for more drops per minute to "catch up." The physician ordered a specific speed of infusion on purpose, so giving it faster could be injurious to a patient. Too much intravenous fluid too fast can overload a weakened or diseased heart, lungs or kidneys. Consult with your instructor or the R.N. if there is any question about the rate of flow.

Always record in the nurses' notes the patient's reaction to the IV infusion, such as discomfort, condition of the infusion site, complaints (expressed or observed) and whether the IV is in place and running properly.

Be sure to study the I & O sheet for a 24-hour period (including all three shifts) with your instructor to be certain you understand how a patient's total IV intake is recorded for a 24-hour day and how new bottles/bags and kinds of solutions are recorded from one shift to the next.

LEARNING ACTIVITIES - concluded

ACTIVITY #7. Discontinuing an IV

Directions: Read the following.

A physician may order an IV discontinued, or the IV may have been a limited order (specific number of bottles/bags) so that it will be discontinued when the order is completed, or the IV may have stopped for some reason and must be discontinued and restarted. Never discontinue an IV yourself unless you have checked with the R.N. and have made sure it should be discontinued. If you observe an IV that is not running properly or you observe infiltration at the infusion site, inform the R.N. immediately. Do not automatically discontinue the IV. If a patient complains of any symptoms of complications that may be due to the IV (or a blood transfusion reaction), you should immediately inform the R.N. of the situation and that the IV is still running. Remember, do not automatically discontinue it.

If you have made sure that the IV is to be discontinued, then you should:

1. Make sure the patient has received all of the IV fluids ordered.
2. Clamp the tubing shut.
3. Remove any tape or bandage holding the needle in place.
4. Withdraw the needle and immediately, with a sterile gauze, sponge held over the infusion site and apply pressure over the site of the injection.
5. Hold this pressure for a few minutes. If bleeding or a hematoma appears, apply a snug sterile dressing. A bandaid may be applied if necessary.
6. Remove any immobilizing devices, e.g. armboard, wrappings, etc.
7. Remove all IV equipment from the room, dispose of it or place it where it belongs.
8. Check on the patient again to be sure the patient is comfortable and that the injection site is not bleeding or oozing.
9. Chart that the IV was discontinued in your nurses' notes, include amount of fluid taken and the condition of the patient and the infusion site.
10. Chart the amount of solution absorbed on the patient's I & O sheet.

POST TEST

Module A - Part I

Directions: Fill in the blanks. You may write on this test.

1. The patient is to receive .04 gm of medication. This is ________________ mg.
2. Ann is to take ʒ $\overline{\text{ss}}$. of cough syrup. How much is this using household measurements? ____
3. Douglas is to receive .5 liter of IV fluids. This is _________ cc.
4. Sue is to receive ℥ i of cough syrup. This is ___________ cc.
5. 5.15 cc = _____ ml.
6. 30 gtts. = _____ cc.
7. 1 pint = _____ cc.
8. 0.5 gm = _____ gr.
9. Lanoxin is labeled 0.125 mg per tablet. You are to give 0.250 mg. You will give __________ tablets.
10. L-Dopa is labeled 0.5 gm per tablet. You are to give 1500 mg. You will give _____ tablets.
11. You need to give 500 mg of L-Dopa. The bottle is labeled 1 gm per tab. You will give _____ tabs.
12. You wish to give 75 mg of Demerol. You have an ampule that contains 200 mg per 2 ml. You will give _____ cc.
13. You are to give 35 U of ACTH. You have a vial that contains 40 U/cc. You will give _____ cc.
14. You are supposed to give 80 mg of Dilantin. You have a bottle of Dilantin suspension that contains 125 mg per 5 cc. You will give _____ cc.
15. The physician has ordered your patient to have .9 gm of Tylenol q 4 h. The bottle is labeled 5 gr per tablet. You will give _____ tabs.
16. You wish to give 25 mg of Thorazine that is labeled 40 mg per cc. You will give _____ gtts.

Post Test - continued

17. If a physician orders 15 mg of morphine, the ampule is marked 1/6 gr/cc. You will give _____ cc.

18. You are to give an IM injection of penicillin 4,000,000 U. You have a solution with 20,000,000 U/10 cc. How many cc's will your dose be? ____________________

19. A patient is to receive 1250 mg of cough syrup. The stock bottle contains 0.25 gm per 4 cc. How much will you give? ____________________

20. You are to give .3 mg of scopolamine IM. It comes in a vial that contains 0.5 mg per cc. How many cc will you give? ____________________

ANSWERS TO POST TEST

Module A - Part I

1. 40 mg
2. 1 tablespoon / 4 teaspoons
3. 500 cc
4. 4 cc
5. 5.15 ml
6. 1.8 to 2 cc
7. 480 or 500 cc
8. 7.5 gr.
9. 2 tablets
10. 3 tablets
11. .5 tabs
12. 3/4 or .75
13. .875 or .88
14. 3.2 cc
15. 3 tabs
16. 9.5 or 10 gtts
17. 1.5 cc
18. 2
19. 20 cc
20. .6 cc

POST TEST

Module B - Part I

Directions: Circle or fill in the correct answer. You may write on this test.

1. How many times during the preparation should you read the label on a medication to be given?

    a. one
    b. two
    c. three
    d. four

2. There are five "rights" of administration. The right time, patient, medication, dosage and ________________________________.

3. All of the following drugs may be applied for their local effect except:

    a. lotion
    b. suppository
    c. spansule
    d. demulcent

4. A powdered drug within a gelatin container is:

    a. a suppository
    b. a spansule
    c. a capsule
    d. enteric-coated

5. The safest, most economical and convenient way of giving medication is:

    a. orally
    b. rectally
    c. parentally
    d. sublingually

6. An intradermal injection is usually of a small amount of solution. What size syringe could you use for giving 5 minims?

    a. 3 cc
    b. 2 cc
    c. TB
    d. insulin

POST TEST - continued

7. For an intramuscular injection given to an adult, what size needle would you use?
    a. 19
    b. 22
    c. 25
    d. 14

8. For a subcutaneous injection, what size needle would you use?
    a. 19
    b. 22
    c. 25
    d. 14

9. All of the following sites may be used for an IM injection except:
    a. deltoid
    b. gluteus maximus
    c. quadriceps
    d. biceps

10. Which nerve may be injured if the IM injection is mistakenly given into the triceps muscle?
    a. radial
    b. sciatic
    c. brachial
    d. carotid

11. After thrusting the needle into the depth of the muscle, you pull back on the plunger of the syringe. This is called?
    a. instilling
    b. aspirating
    c. testing
    d. none of the above

12. The nerve you want to avoid hitting when giving an injection into the gluteus muscle is the:
    a. radial
    b. sciatic
    c. brachial
    d. carotid

13. Oral administration is often desired because:
    a. it is an efficient mode of administration for long-acting drugs.
    b. the nurse can be sure a patient will take an oral medication.
    c. drugs are absorbed very rapidly from the GI tract.
    d. patients generally accept oral medications better than other forms of administration.

POST TEST - continued

14. Parenteral administration refers to:

    a. intramuscular
    b. intradermal
    c. sublingual
    d. intravenous
    e. all are correct
    f. a, b, c
    g. a, b, d

15. An injection in which the medication is injected directly under the skin is:

    a. intradermal
    b. subcutaneous
    c. intramuscular
    d. intravenous

16. A medication that is allowed to dissolve under the tongue is:

    a. cough drops
    b. sublingual
    c. harmful to teeth
    d. submaxillary

17. Medications may be put back into the bottle when:

    a. the patient refuses medication.
    b. you poured too much into the medicine cup.
    c. medication is individually wrapped and unopened.
    d. never.

18. An IM medication should be given into the gluteus maximus in which area?

    a. RUOQ
    b. LUIA
    c. RUIQ
    d. LLOQ

19. An ampule and a vial are different containers. When withdrawing medication, air should be injected first into:

    a. the ampule
    b. the vial
    c. both
    d. neither

20. In identifying a patient before giving the medication, you should always:

    a. ask his name.
    b. check his wristband.
    c. ask his roommate.
    d. all are correct.

POST TEST - continued

21. An intramuscular injection is given at what angle?

    a. 45 degree
    b. 30 degree
    c. 90 degree
    d. 180 degree

22. A dissolved liquid preparation is:

    a. an emulsion
    b. a solution
    c. an elixir
    d. a lotion

23. A subcutaneous injection is given at what angle?

    a. 45 degree
    b. 30 degree
    c. 90 degree
    d. 180 degree

24. A tablet that is scored is:

    a. a single dose unit.
    b. a compressed powdered drug.
    c. used for insertion into a body orifice.
    d. a pill with a line through it.

25. A parenteral medication must be:

    a. readily soluble.
    b. sterile.
    c. rapidly absorbed.
    d. all are correct.

Directions: Interpret in writing the following sentences using no abbreviations.

1. IV mg of Ipecac syrup p.c. q.4.h. p.r.n.

2. Phenergan 2.5 mg IM stat.

3. Ambulate ad lib.

4. Potassium iodide 600 mg p.o. a.c.

5. Milk of magnesia ʒ$\overline{ss}$ q.h.s.

6. Maxitrol Opthalmic ung. apply OU q.i.d.

7. Morphine sulfate 10 mg sub. q.q 4 h p.r.n. pain.

POST TEST - concluded

8. Aspirin gr V p.o.
9. Patient s̄ symptoms of respiratory distress.
10. Atropine Opthalmic solution 1%, gtts ī O D t.i.d.
11. Terpin hydrate 2 fl ℥ q 6 h p.r.n. for cough.
12. Phenergan c codeine q 4 h during noct. p.r.n.
13. Patient eating q.s.
14. Atropine gr. 1/150 IM 1 h preop.
15. Ipecac syrup fl. ℥ īī p.o.

ANSWERS TO POST TEST

Module B - Part I

1. c
2. route
3. c
4. c
5. a
6. c
7. b
8. c
9. d
10. a
11. b
12. b
13. d
14. g
15. a or b
16. b
17. c or d
18. a
19. b
20. b
21. c
22. b
23. a
24. b or d
25. d

1. 4 milligrams of Ipecac syrup after meals every 4 hours as needed.
2. Phenergan 2.5 milligrams intramuscularly immediately.
3. Ambulate as desired.
4. Potassium iodide 600 milligrams orally before meals.
5. Milk of magnesia 1/2 oz every night (hour of sleep).
6. Maxitrol Opthalmic ointment apply both eyes 4 times day.
7. Morphine sulfate 10 milligrams subcutaneously every 4 hours as needed.
8. Aspirin grains 5 orally.
9. Patient without symptoms of respiratory distress.
10. Atropine Opthalmic solution 1 drop right eye 3 times day.

ANSWERS TO POST TEST - concluded

11. Terpin hydrate 2 fluid drams every 6 hours as needed.
12. Phenergan with codeine every 4 hours at night as needed.
13. Patient eating quantity sufficient.
14. Atropine grains 1/150 intramuscular 1 hour before surgery.
15. Ipecac syrup 2 fluid drams orally.

unit 19

PHARMACOLOGY

Module A, Part II - Medications used in the Treatment of Musculoskeletal Disorders

RATIONALE

In order to provide optimal nursing care you must understand how to prepare and administer medications to a patient with a disorder of the musculoskeletal system and you must understand how these medications affect the patient.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the classifications of drugs commonly used in the treatment of musculoskeletal disorders.
2. Identify side effects of drugs commonly used in the treatment of musculoskeletal disorders.
3. Identify nursing considerations that relate to the administration of drugs used in the treatment of musculoskeletal disorders.
4. Identify major uses for selected drugs in the treatment of musculoskeletal disorders.
5. Be able to calculate and convert dosages for drug administration.
6. Demonstrate setup and administration of medications in the treatment of musculoskeletal disorders when given an assignment in the clinical area.

LEARNING ACTIVITIES

Directions: All of the information needed to complete Module A and to pass the test is included in this module and the PDR (Physician's Desk Reference).

Exercises have been designed to help you learn the material and focus on areas not specifically included (such as recommended dosages for individual drugs).

Since so many medications are included in this module, those drugs that are most commonly used with these disorders (and may be included on the test) have a star next to them.

You will better understand these drugs if you first complete Module 17-A, "Nursing Care for Patients with Diseases of the Musculoskeletal System."

REMEMBER: Much of the information relating to these drugs is generalized and based upon the classification of the drug. Therefore when giving a drug, LOOK UP EACH DRUG for its specific side effects, nursing consideration, actions used and dosages.

LEARNING ACTIVITIES - continued

ACTIVITY #1. Central Skeletal Muscle Relaxants

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
baclofen	Lioresal
*carisoprodol	Soma
chlorzoxazone	Paraflex
cyclobenzaprine	Flexeril
dantrolene sodium	Dantrium
metaxalone	Skelaxin
methocarbamol	Robaxin
orphenadrine citrate	Norflex

The most beneficial results from the administration of centrally acting skeletal muscle relaxants seem to be associated with their ability to relieve acute muscle spasm of local origin. They are used as adjuncts to physiotherapy in the treatment of sprains, strains or trauma to ligaments. They often accompany the administration of other drugs (such as salicylates, adrenal corticosteroids) in the treatment of myositis, fibrositis, spondylitis, bursitis and arthritis. These agents have been used effectively to lessen motor activity in certain neurologic disorders (cerebral palsy) and in other dyskinesia characterized by abnormal reflex activity, increased muscle tonus, involuntary movements and incoordination. The usefulness of these drugs appears to be related to their sedative effect and ability to relieve anxiety.

Major Uses

1. Relief of acute muscle spasm associated with trauma, inflammation, manipulations of psychogenic disorders.

2. Lioresal and Dantrium are useful for spasticity associated with CNS disorders, like multiple sclerosis.

Mechanisms of Action

1. Depression of the transmission of nerve impulses from the spinal cord to skeletal muscles.

Side Effects

1. Drowsiness
2. Dizziness and other CNS side effects
3. Nausea
4. Constipation
5. GI upset
6. Rash
7. Pruritis

LEARNING ACTIVITIES - continued

Nursing Considerations

1. Patients taking these medications should be cautioned to avoid undertaking activities that require mental alertness, judgment and physical coordination, such as driving or operating dangerous machinery, until their particular body response has been determined.

2. The patient should be warned against combining these drugs with alcohol or other depressants.

3. To prevent gastric distress, these medications are best taken with meals or milk.

4. With the administration of Paraflex, the patient should be warned that the urine may change to an orange or purple-red color.

5. Record the amount of relief after administration of the drug to determine whether the dosage can be reduced.

ACTIVITY #2. Neuromuscular Blocking Agents

__Directions:__ Read the following.

GENERIC NAMES	TRADE NAMES
*curare	
decamethonium bromide	Syncurine
callamine triethiodide	Flaxedil
hexafluorenium bromide	Mylaxen
metocurine iodide	Metubine
pancuronium bromide	Pavulon
*succinylcholine chloride	Anectine
*tubocurarine chloride	Tubarine

Neuromuscular blocking agents, sometimes called peripherally acting skeletal muscle relaxants, are potent drugs with very specific uses and should only be administered by a doctor or under a doctor's supervision with emergency support equipment available. These drugs are usually given intravenously but may be given intramuscularly. Absorption from the GI tract is poor. One of these agents, curare, has been obtained from tropical vines by Indians of South America and used as a poison for arrows and darts.

Major Uses

1. To produce adequate muscle relaxation during anesthesia to reduce excessive use of general anesthesia.

2. To provide muscular relaxation to facilitate endotracheal intubation (preventing laryngospasm) and the reduction of fractures and dislocations.

3. For symptomatic control of muscle spasm in convulsive states that may occur from tetanus, black widow spider bite, drug intoxication or epilepticus.

LEARNING ACTIVITIES - continued

4. To decrease muscle contraction during electroconvulsive therapy.
5. To control the respirations of patients on respirators.
6. As a diagnostic agent for myasthenia gravis. A small dose of this drug will produce profound exaggeration of symptoms if the patient has myasthenia gravis.

Mechanism of Action

These agents work by blocking the transmission of nerve impulses at the skeletal neuromuscular junction.

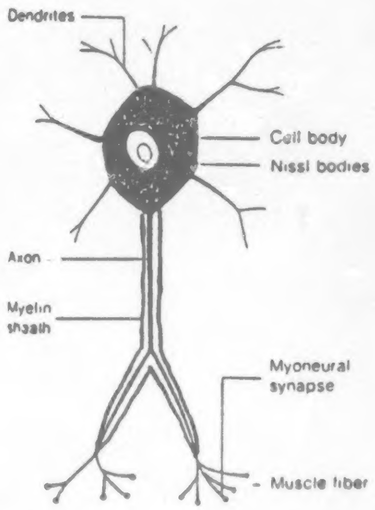
WHERE NEUROMUSCULAR BLOCKING AGENTS ACT

The basic unit of the nervous system is the nerve cell or neuron. Typically, it consists of a central cell body and a number of threadlike projections of cytoplasm known as nerve fibers. There are two types:

1. The axon, which conducts impulses away from the cell body
2. The dendrite, which conducts impulses to the cell body

Most neurons have multiple dendrites and a single axon.

Axons are surrounded by a white fatty substance called myelin, which insulates and protects the delicate inner fiber.



Neurons receive and transmit impulses at junctions called synapses, where one structure almost touches another. When information flows, one of the structures releases a transmitting chemical that crosses the narrow cleft between them and activates the receiving cell.

Neuromuscular blocking agents block this chemical at the neuromuscular synapse.

Side Effects

1. Side effects shared by all neuromuscular blocking agents are:
    a. Interference with respiratory function that may progress to respiratory paralysis.
    b. Residual muscle weakness.
    c. Hypersensitivity reaction.

LEARNING ACTIVITIES - continued

2. Many of these agents may also cause:
   a. Hypotension.
   b. Bronchospasm.
   c. Cardiac disturbances such as:
      (1) Tachycardia.
      (2) Cardiac arrest.

Nursing Considerations

1. Reassure the patient that postoperative muscle stiffness is normal and will soon subside.

2. Drug administration precautions should include having emergency respiratory support on hand.
   a. Endotracheal equipment
   b. Respirator
   c. Oxygen
   d. Atropine
   e. Neostignine

3. When administering Tubarine, be aware of the many drug interactions that may occur. Drugs that potentiate the effect of Tubarine include:
   a. Ether and other general anesthetics.
   b. Antibiotics, specifically:
      (1) Neomycin.
      (2) Streptomycin.
      (3) Polymyxin B.
   c. Thiazide diuretics.
   d. MAO inhibitors.
   e. Quinidine.

   Drugs that inhibit the effect of Tubarine include:
   a. Neostigmine.
   b. Edrophonium chloride
   c. Epinephrine.

ACTIVITY #3. Drugs Used in the Treatment of Gout.

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*allopurinol	Zyloprim
*colchicine	Colchicine
*probenecid	Benemid
probenecid/colchicine	Col Benemid
*sulfinpyrazone	Anturane

LEARNING ACTIVITIES - continued

Gout is a metabolic disease of unknown origin. It is thought that heredity plays a role since people in the same family are more likely to be afflicted by it than the general population. It is also more prominent in males than females.

Gout is characterized by defective purine metabolism and manifests itself by attacks of acute pain, swelling and tenderness of joints such as those of the great toe, ankle, instep, knee and elbow. The amount of uric acid in the blood becomes elevated and tophi (deposits of uric acid or urates) form in the cartilage of various parts of the body. Chronic arthritis, nephritis and premature sclerosis of blood vessels may develop if gout is uncontrolled.

Drugs given to relieve gout are those given to relieve pain and increase elimination of uric acid. The latter are uricosuric agents. Salicylates, Benemid and colchicine are the drugs of choice at this time. Other drugs used are Butazolidin and Indocin.

Major Uses

1. Benemid and Anturane are used for maintenance therapy in chronic gouty arthritis and tophaceous gout.

2. Benemid and Anturane are used as an adjunct to antibiotic therapy to increase antibiotic concentrations.

3. Zyloprim is used to lower serum and urinary uric acid levels in the treatment of primary gout.

4. Colchicine is used to relieve attacks of gouty arthritis.

Side Effects

1. Anorexia
2. Nausea and vomiting
3. Rash
4. Drowsiness
5. Blood dyscrasias

Nursing Considerations

1. Benemid and Anturane contain no analgesics or anti-inflammatory agents and are of no value during acute gout attacks. With usage of these drugs, frequency, severity and length of acute gout attacks may increase during the first 6 to 12 months of therapy. For this reason, prophylactic colchicine is given during the first 3 to 6 months. (Colchicine is used as an analgesic for acute gout attacks).

2. Alcohol should be avoided with use of Benemid and Anturane. It increases urate levels.

3. These drugs should be given with milk, food or antacids to minimize GI disturbances.

LEARNING ACTIVITIES - continued

4. There may be false positive glucose tests with clinitest tabs but not with clinistix, diastix or testape when Benemid is administered.

5. With the usage of these drugs, fluids should be forced to maintain a daily output of 2-3 liters to decrease the occurrence of crystals forming in the kidneys and ureters.

6. The patient needs to be advised that Zyloprim may cause drowsiness.

7. Salicylates may also be used in the treatment of gout because of their ability to increase the urinary output of uric acid and in milder cases of gout to relieve the discomfort.

   NOTE: The salicylates should NOT be administered with Benemid since each is said to counteract the uricosuric effect of the other.

8. Since uric acid is not very soluble in acid urine but is readily soluble in alkaline urine, the use of an alkalizing agent may be indicated in conjuction with uricosuric agents.

ACTIVITY #4. Analgesics and Anti-inflammatory Drugs Used in Treatment of Musculoskeletal Disorders.

Directions: Read the following.

GENERIC NAME	TRADE NAME
*acetylsalicylic acid (aspirin)	Bayer, Bufferin, etc.
*aurothioglucose	Solganol
*ibuprofen	Motrin
*indomethacin	Indocin
naproxen	Naprosyn
*oxyphenbutazone	Oxalid, Tandearil
*phenylbutazone	Azolid, Butazolidan
*sulindac	Clinoril
tolmetin	Tolectin

Many of these medications are useful in treating musculoskeletal disorders such as:

1. Rheumatoid arthritis
2. Osteoarthritis
3. Sciatica
4. Bursitis

* For other analgesics please see module 19H.

LEARNING ACTIVITIES - continued

Major Uses

1. Relief of mild to moderate pain.
2. Reduction of inflammation associated with rheumatoid arthritis, gout, bursitis, osteoarthritis and other inflammatory conditions.

Mechanism of Action

1. Depression of peripheral chemoreceptors to block pain impulses.

Side Effects

Vary from agent to agent but may include:

1. GI distress.
2. Tinnitus.
3. Allergy symptoms.

Each drug should be checked before it is given.

Nursing Considerations

1. Many of these products cause GI distress and should be given with food, milk or antacid to reduce this side effect.
2. ASA and products containing ASA should be used cautiously in:
    a. Vitamin K deficiency.
    b. Bleeding disorders.
    c. Hypoprothrombinemia.
    d. Asthmatics with nasal polyps (may cause severe bronchospasm).
3. Some products are enteric-coated and/or come as timed release capsules to prolong the effect or to avoid absorption in the stomach. These agents are absorbed erratically and are not indicated for chronic usage.
4. With these drugs look for signs of:
    a. GI bleeding.
    b. Petechiae.
    c. Bleeding gums.
5. Butazolidan, Indocin and ASA enhance the action of the anticoagulants (prolonging bleeding time) by inhibiting platelet aggregation.
6. Solganol is a drug for IM injection that contains approximately 50% gold and is used in the treatment of rheumatoid arthritis. Precautions include:

LEARNING ACTIVITIES - continued

a. Observing for toxic reactions that may be manifested by pruritis.
b. Stomatitis.
c. Indigestion.
d. Dermatitis.
e. Jaundice.

At first signs of these symptoms, the patient should be treated with dimercarprol.

ACTIVITY #5. Corticosteroids

Directions: Read the following.

GENERIC NAME	TRADE NAME
dexamethasone	Decadron
*hydrocortisone	Cortef
*methylprednisolone	Medrol
*prednisone	Deltasone
*triamcinolone	Aristocort

Corticosteroids are commonly used in disorders involving the musculoskeletal system for the anti-inflammatory effect they exert. These drugs do not cure the disease process but they can decrease symptoms such as:

1. Stiffness.
2. Swelling.
3. Pain upon motion.

Many of these drugs are given intra-articularly for joint inflammation.

For more information regarding corticosteroids, please refer to Module 19F.

Major Uses

Corticosteroids may be used in the management of arthritic disease process, bursitis, and disease of the joints and nonarticular structures.

Side Effects

1. Cushing syndrome
    a. Acne
    b. Moon face
    c. Hirsutism
    d. Buffalo hump
    e. Hypertension
    f. Amenorrhea
    g. Glycosuria
    h. Edema

2. GI distress

LEARNING ACTIVITIES - continued

Nursing Considerations

1. Administer drug with food, milk or antacid to reduce gastric irritation.
2. These drugs may mask or exacerbate infections.
3. Short-term therapy (less than 7 days) with moderate doses (40 mg or less of prednisone or equivalent drug) produces few side effects and may be abruptly discontinued. Long-term or high-dose therapy must be gradually discontinued or else acute adrenal insufficiency may result.

ACTIVITY #6. Review Questions

Directions: Answer the following questions. Answers can be found by reading the preceeding information and using the PDR.

1. A group of drugs used in combination with physiotherapy in the treatment of trauma to the ligaments is: ______________________________

2. Two drugs used for their relief of spasticity in the treatment of multiple sclerosis and cerebral palsy are ______________ and ______________

3. Georgeann Giodo is receiving Robaxin 750 mg Q4 hrs. As her nurse, what are you interested in documenting? ______________________________

4. A group of potent drugs used to produce muscular relaxation for a variety of conditions is the: ______________________________

5. Name six different uses for the group of drugs you have named in question #4.

    a. ____________________ d. ____________________

    b. ____________________ e. ____________________

    c. ____________________ f. ____________________

6. Three side effects that may occur with use of Anectine are:

    a. ______________________________
    b. ______________________________
    c. ______________________________

7. In the treatment of gout it is important to accomplish two objectives. These are:

    a. ______________________________
    b. ______________________________

8. ____________________ is used in the treatment of acute gouty attacks, while ____________________ 7 ____________________ are used for maintenance therapy in the treatment of chronic gout.

LEARNING ACTIVITIES - continued

9. Aspirin may also be used in the treatment of gout because of its ability to increase the excretion of uric acid.

TRUE FALSE

10. ____________ contains about 50% gold and may be given IM to treat arthritis.

11. Corticosteroids are used in the treatment of musculoskeletal disorders because:

____

12. List as many side effects of corticosteroid therapy as you can:

____________________ ____________________

____________________ ____________________

____________________ ____________________

____________________ ____________________

____________________ ____________________

13. Indicate usual drug doses for the following medications:

a. Dantrolene Sodium: ____________________
b. Norflex: ____________________
c. Anectine: ____________________
d. Colchicine: ____________________
e. Anturane: ____________________
f. Clinoril: ____________________
g. Indocin: ____________________
h. Prednisone: ____________________

14. Indicate discharge instructions for the following:

a. Robaxin 750 mg Q4 hours: ____________________

____

____

b. Allopurinol 100 mg TID: ____________________

____

____

LEARNING ACTIVITIES - concluded

c. Aspirin gr X Q 6 hours: ______________________________

____

d. Decadron 2 mg BID: ______________________________

____

ACTIVITY #7. How Calculating are You?

Directions: Complete the following problems showing your work and turn them in to your instructor at the beginning of the lecture on drugs used in the treatment of diseases of the musculoskeletal system.

1. 0.5 X 10 =
2. 0.5 $\overline{)43.5}$
3. 1/2 grain = _____ mg
4. 0.03 gram = _____ mg
5. Tylenol grain X = _____ gram = _____ mg
6. Lomotil 2.5 mg = _____ gram = _____ grain
7. Compazine 30 mg = _____ gram = _____ grain
8. Robitussin ʒ i = _____ tsp. = _____ cc
9. IV - 1,000 cc to run in 12 hours. The drip chamber delivers 10 gtts/cc ______ cc/hr. ______ gtts/min.
10. On hand - 30 mg in 1 cc
    Dose ordered: 50 mg
11. Dose ordered: grain 1/500
    On Hand - grain 1/400 in 1 cc
12. Dose ordered: 75 mg
    On hand - 100 mg in 5 cc
13. Dose ordered: 12.5 mg
    On hand - 25 mg in 1 cc
14. Dose ordered: 75 mg
    On hand - 100 mg in 5 cc
15. Dose ordered: 30 Meq
    On hand - 25 Meq in 10 cc

GOOD LUCK

PHARMACOLOGY

Module B, Part II - Medications Used in the Treatment of Cardiovascular and Hematologic Disorders

RATIONALE

In order to provide optimal nursing care you must understand how to prepare and administer medications to a patient with disorders of the cardiovascular or hematologic systems. You must also understand how these medications can affect the patient.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the classification of drugs commonly used in the treatment of cardiovascular or hematologic disorders.
2. Identify side effects of drugs commonly used in the treatment of cardiovascular or hematologic disorders.
3. Identify nursing considerations that relate to the administration of drugs used in the treatment of cardiovascular or hematologic disorders.
4. Identify general principles that relate to the administration of drugs used in the treatment of cardiovascular and hematologic disorders.
5. Be able to calculate and convert dosages for drug administration.
6. Demonstrate setup and administration of medications in the treatment of cardiovascular and hematological disorders when given an assignment in the clinical area.

LEARNING ACTIVITIES

Directions: All of the information needed to complete Module B and pass the test is included in this module and the PDR (Physician's Desk Reference). Exercises have been designed to help you learn the material and focus on areas not specifically included (such as recommended dosages for individual drugs).

Since so many medications are included in this module, an effort has been made to simplify your study for the test by placing a star next to the more common drugs that may be included on the test.

You will better understand these drugs if you first complete Module 17-B, "Nursing Care for Patients with Cardiovascular Diseases."

LEARNING ACTIVITIES - continued

ACTIVITY #1. Antilipemics

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*cholestyramine	Questran
*clofibrate	Atromid-S
colestipol HCL	Colestid
*dextrothyroxine sodium	Choloxin
*niacin	Nicotinex, etc.

Both clinical and experimental studies indicate an important relationship between atherosclerosis and high levels of circulating blood lipids (glycerides, phospholipids and cholesterol).

Atherosclerosis is a causative factor in coronary artery disease, myocardial infarction, cerebral arterial disease, peripheral arterial occlusive disease, renal arterial insufficiency and hypertension. Therefore, if an agent could be found that would retain serum lipid levels within normal limits, atherosclerosis might be prevented or the progression of the disease halted.

However, even though the relationship of atherosclerosis and high blood lipid levels exists in some, it is not found in others. At this time treatment with antilipemic drugs is controversial and usually limited to the treatment of primary hyperlipoproteinemias. Their effectiveness in primary and secondary coronary heart disease due to atherosclerosis remains uncertain. These drugs may be of value in programs designed to reduce multiple-risk factors including the following:

1. Increased serum lipids.
2. Cigarette smoking.
3. Hypertension.
4. Diabetes.
5. Obesity.
6. Sedentary life style.
7. A family history of heart disease.
8. Emotional stress.

Major Uses

Treatment of hyperlipoproteinemias.

LEARNING ACTIVITIES - continued

Mechanism of Action

All antilipemics lower the amount of serum lipids in the bloodstream, but their precise mechanism of action may differ.

Side effects

Vary from agent to agent but may include:

1. Diarrhea
2. Nausea
3. Vomiting
4. Anorexia
5. Abdominal pain

Nursing Considerations

1. Antilipemic agents should be prescribed only when dietary measures fail. (see below for specific diets for type II and IV, IV hyperlipoproteinemia)

Specific Diets for Type II, IV Hyperlipoproteinemia

FOODS INCLUDED	FOODS EXCLUDED
Beverages (Nondairy)	
II - Coffee, tea, carbonated beverages, fruits and vegetable juices.	II - None
IV - Same as above, but only unsweetened beverages allowed.	IV - Sweetened beverages
Breads and Cereals	
II & IV - Enriched varieties of all breads except egg bread, saltines and graham crackers. Baked goods containing no whole milk or egg yolks (angel food cake). All cereals and grain products (rice, macaroni, noodles, spaghetti).	II & IV - Biscuits, muffins, corn bread, pancakes, waffles. French toast, hot rolls, corn or potato chips, flavored crackers.
II - 4 or more servings a day.	
IV - Number of servings specified for weight control.	

LEARNING ACTIVITIES - continued

	FOODS INCLUDED		FOODS EXCLUDED
Dairy Products			
II -	Skim milk, nonfat, buttermilk, evaporated skim milk, dried skim milk, uncreamed (no-fat) cottage cheese, cheese made from skim milk plus specially prepared cheese high in polyunsaturated fat, 1/4 cup creamed cottage cheese may be substituted for 1 oz meat.	II & IV -	Fresh, dried, evaporated or condensed whole milk, sweet or sour cream yogurt; ice cream or ice milk, sherbet, commercial whipped topping, cream cheese and all other cheese, except skim milk cheese; nondairy or other cream substitutes with exceptions shown under food included.
IV -	Same as above except that 2 oz of any cheese allowed per week.		
Desserts			
II & IV -	Angel food cake, puddings or frozen desserts made with skim milk, jello, meringues, fruit ices or whips, plus desserts made with allowed fats.	II & IV -	All cake and cookie mixes, except angel food mix; any pies, cakes, cookies containing whole milk, fat or egg yolk, allowed fats included.
Fats			
II -	Safflower oil, corn oil, soft safflower margarine, commercial mayonnaise.	II -	Butter, lard, hydrogenated shortening and margarine, coconut oil and other oils not listed, salt pork, suet, bacon and meat drippings, gravies and sauces unless made with allowed fats and skim milk.
IV -	Any liquid vegetable unsaturated fat (safflower, corn, cottonseed, olive and peanut oils). Commercial mayonnaise, commercial salad dressings containing no sour cream or cheese.	IV -	Same as for II except margarine made from unsaturated fat permitted.
Fruits			
II -	Any fresh, frozen, canned or dried fruit or juice of which 1 serving/day should be citrus fruit, avocado in small amounts 2 servings/day.	II & IV -	None
IV -	Same as for II except 3 servings/day and small amounts of avocado allowed.		

LEARNING ACTIVITIES - continued

ACTIVITY #2. Vasodilators

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
amyl nitrate	
cyclandelate	Cyclospasmol
dioxyline phosphate	Paveril Phosphate
*dipyridamole	Persantine
erythrityl tetranitrate	Cardilate
ethaverine HCL	Spasodil, etc.
*isosorbide dinitrate	Sorbitrate, etc.
*isoxsuprine HCL	Vasodilan, etc.
*nitroglycerin	Nitrobid, Nitrostat, etc.
*papaverine HCL	Pavabid
*pentaerythritol tetranitrate	Peritrate, etc.
tolazoline HCL	Priscoline, etc.

Vasodilator drugs can be grouped into two therapeutic categories.

1. Group I includes drugs used to treat peripheral vascular disease such as: Cyclospasmol, Paveril Phosphate, Spasodil, Vasodilan, Pavabid and Priscoline.
2. Group II includes loosely categorized coronary vasodilators (the nitrates, the nitrites and Persantine).

Major Uses

1. For treatment of vasospastic and peripheral vascular diseases:
   a. Arteriosclerosis
   b. Arteriosclerosis obliterans
   c. Intermittent claudication
   d. Buerger's disease
   e. Raynaud's syndrome
   f. Endarteritis
   g. Frostbite
2. For treatment and prophylaxis of acute and chronic angina pectoris.

LEARNING ACTIVITIES - continued

3. For adjunctive therapy in the treatment of chronic congestive heart failure.

4. For antiplatelet activity in combination with warfarin to decrease thrombus formation (Persantine).

5. For antiplatelet activity, in combination with aspirin, to decrease the risk of platelet thrombus.

Mechanism of Action

These drugs work by relaxing the smooth muscles, especially the blood vessels, which results in vasodilation and increased blood flow to the extremities and the brain. Group I drugs further work to preferentially redistribute the flow of the blood.

Group II drugs create a pooling of blood in the peripheral circulation by vasodilation thus reducing the heart's workload and oxygen consumption.

Side Effects

Vary from agent to agent but may include:

1. Nausea
2. Vomiting
3. Palpitations
4. Hypotension
5. Tachycardia

Nursing Considerations

1. Before amyl nitrate is used, cigarettes should be extinguished, as the ampule may ignite.

2. The drug Persantine should be administered one hour before meals. In combination with warfarin, clotting time is increased. Watch for signs and symptoms of bleeding.

3. Nitroglycerin is available:

   a. In tablet form for sublingual administration to relieve acute angina attacks. (Read the explanation for use of sublingual nitroglycerin.)

   b. In 2.5 mg and 6.5 mg timed-release capsules for oral administration to be taken at 8 or 12 hours intervals for prolonged vasodilation.

   c. As an ointment that contains 2% nitroglycerine in a lanolin petrolatum base. Read the explanation for applying nitroglycerin ointment on page 8.

LEARNING ACTIVITIES - continued

Use of Sublingual Nitroglycerin

The following information will help you explain to your patients how they should administer nitroglycerine sublingually.

Nitroglycerine relieves anginal pain by temporarily dilating (widening) veins and arteries. This brings more blood and oxygen to the heart when it needs it most and prevents the heart from having to work so hard.

Follow these instructions.

1. When anginal pain begins, stop what you are doing, lie down and put a pill under your tongue. Let it dissolve completely and hold the saliva in your mouth for 1 to 2 minutes before swallowing. Always sit or lie down when you take your pill or you may get dizzy. If you feel headachy or your face flushes after taking your pill, don't worry. These effects are only temporary.

2. Take up to 3 pills, one every 10 minutes, for pain. Record each dosage. If the pain doesn't go away after 30 minutes or is unusually severe, call the doctor at once or go to the hospital emergency ward.

3. Don't drink alcohol without asking your doctor first.

4. Never stop taking your pills altogether without your doctor's permission. However, don't worry about taking them as needed, because they are not habit forming.

5. Keep your pills in their original container with the cotton removed. They will lose their strength if they're exposed to light, moisture or heat or if they're more than three months old. Get fresh ones after three months. Fresh pills produce a slight burning sensation under your tongue.

6. Tablets may be taken three to five minutes before engaging in activity that is known to cause anginal attacks.

   Call the doctor immediately if you notice any of the following:

   a. Unusually severe or prolonged pain

   b. Fainting

   c. Dizziness

Applying Nitroglycerin Ointment

The following information will help you in applying nitroglycerine ointment.

Unlike other medications applied to the skin, nitroglycerine ointment is used for its systemic, not local, effect.

Before applying this drug, take the patient's blood pressure so you will have it to compare with later readings.

LEARNING ACTIVITIES - continued

A special dose-measuring applicator is provided for measuring the amount and spreading the ointment on the skin. The applicator prevents absorption through the fingers during application. A thin layer of ointment is applied over the chest, abdomen or anterior thigh without rubbing it in. For increased absorption, cover the sight with plastic wrap. Nitroglycerine is continuously absorbed through the skin into the circulation producing prolonged vasodilation. The ointment may be applied every three to four hours. The h.s. dosage is usually one to two inches of ointment.

After five minutes take the patient's blood pressure. If it has dropped significantly and the patient has a headache, notify the doctor.

ACTIVITY #3. Cardiotonic Glycosides

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
deslanoside	Cedilanid-D
digitalis leaf	Digifortis, Pil-Digis
*digitoxin	Crystodigin, Purodigin
*digoxin	Lanoxin
*gitalin	Gitaligin
lanatoside C	Cedilanid

Drugs in the digitalis group are among the oldest therapeutic agents available. Digitalis is the dried leaves of Digitalis purpurea or the purple foxglove. Digitalis leaves contain a number of glycosides; the most important are digitoxin, digoxin and gitalin. While all cardiac glycosides have similar pharmacologic properties, they differ in absorption and rate of elimination, time and onset of action and duration of action. Which cardiac glycoside to use is determined by the needs of a particular individual and his/her reactions to the drug.

Mechanism of Action

Digitalis influences the mechanical performance of the heart by increasing the strength of myocardial contraction.

Side Effects

1. GI upset
    a. Anorexia
    b. Nausea and vomiting
    c. Abdominal discomfort
2. Visual disturbances
    a. Blurry vision

LEARNING ACTIVITIES - continued

b. Flickering lights

c. Yellow-green halo around visual images

d. Colored dots

3. Restlessness

4. Facial pain

5. Headache

6. Irritability

7. Fatigue

8. Confusion and disorientation in the elderly

9. Irregular pulse

10. Marked bradycardia

Nursing Considerations

1. There is no antidote for this drug. Therefore, always doublecheck the name and dose of the drug.

2. In treating heart failure, digitalis is given until optimum cardiac effects are achieved and most of the signs and symptoms of heart failure have disappeared. When the patient has reached that state in which the drug has done all it can, the patient is said to be DIGITALIZED. Usually DIGITALIZATION is accomplished by giving the patient, over a period of hours or days, a total amount necessary to produce the desired cardiac effect — the digitalizing dose — and then keeping the patient on a smaller daily dose - the maintenance dose - designed to replace the daily loss of the drug from the body.

3. A very narrow margin exists between therapeutic dosage and toxicity. Signs and symptoms of toxicity may be anorexia, nausea, vomiting, diarrhea, headache, visual disturbances, weakness, irritability, restlessness and arrhythmia.

4. ALWAYS TAKE AN APICAL PULSE FOR ONE MINUTE BEFORE ADMINISTERING THE DRUG. HOLD THE DRUG AND CALL THE DOCTOR IF THE AP IS LESS THAN 60.

Digoxin Patient Teaching Information

The following information will help you explain to your patients how they should take digoxin.

1. Always take your pills at the same time each day. Take them only as prescribed. Never skip a dose or take extra pills without first checking with your doctor.

LEARNING ACTIVITIES - continued

2. Learn to take your own pulse to record your heart's rate or rhythm. If your pulse rate is irregular or falls below 60, call the doctor before you take any more pills.

3. Don't take any other drugs, including nonprescription drugs, without first asking your doctor.

Call the doctor immediately if you notice any of the following.

a. Loss of appetite

b. Nausea and vomiting

c. Diarrhea (for more than one day)

d. Change in heart rate or rhythm

e. Blurred vision

f. Flickering lights

g. Yellow borders around dark objects

h. Mental confusion

i. Headache

j. Fatigue

ACTIVITY #4. Antiarrhythmics

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*atropine sulfate	
disopyramide phosphate	Norpace
isoproterenol HCL	Isuprel
*lidocaine HCL	Xylocaine
phenytoin	Dilantin
*procainamide HCL	Pronestyl
*propranolol HCL	Inderal
*quinidine bisulfate	Biquin Durules
*quinidine gluconate	Quinaglute Duratabs
*quinidine polygalacturonate	Cardioquin
*quinidine sulfate	Quinidex Extentabs

An alteration in the normal conduction of the heart is called an arrhythmia. The arrhythmia may be life-threatenting.

LEARNING ACTIVITIES - continued

Antiarrhythmics are used to treat atrial and ventricular arrhythmias of various causes, including those secondary to myocardial infarction or cardiac glycoside toxicity. As a group, their toxic effects are usually serious. Monitoring therapy is imperative. Before antiarrhythmic treatment is undertaken, underlying causes (if known) should be corrected when possible, as in electrolyte imbalances or hypoxia. Two alternative antiarrhythmic treatments are effective and may be used if drug therapy fails.

1. Electrocardioversion
2. Electrical pacemakers

Major Uses

1. Treatment of atrial and ventricular arrhythmias of various etiologies.
2. Treatment and prophylaxis of arrhythmias after myocardial infarction.

Side Effects

Vary from agent to agent but may include:

1. Nausea and vomiting
2. Blood dyscrasia
3. Confusion
4. Arrhythmias

Nursing Considerations

1. Atropine is useful for bradycardia and bradyarrhythmias. Be alert for tachycardia in cardiac patients.
2. Chewing gum or sucking on hard candy may relieve dry mouth discomfort produced by atropine and other of these drugs.
3. Before patient discharge, stress the importance of taking these medications on time as prescribed. For nighttime dosages, the patient may have to set an alarm clock.
4. Before using Inderal and quinidine, always check apical pulse rate for one minute. Hold dosage and call the doctor if the pulse rate is less than 50.
5. After long-standing atrial fibrillation, restoration of normal sinus rhythm with Pronestyl, Inderal or quinidine may result in thromboembolism due to dislodgement of thrombi from the atrial wall. Anticoagulation is often recommended prior to restoration of normal atrial rhythm.

LEARNING ACTIVITIES - continued

6. With quinidine, GI side effects, especially diarrhea, are signs of toxicity. The doctor should be notified immediately.

7. The normal EKG (see Diagram I).

NOTE: EKG's will not be taught in this course; however, the normal EKG is included on the following pages for your information.

P-wave - is the contraction of the atria.

PR interval - is measured from the beginning of the P-wave until the beginning of QRS complete. This is the time it takes from the beginning atrial contraction to the beginning of ventricular contraction.

QRS complex - is the contraction (depolarization of both ventricles).

T-wave - is ventricular recovery (repolarization).

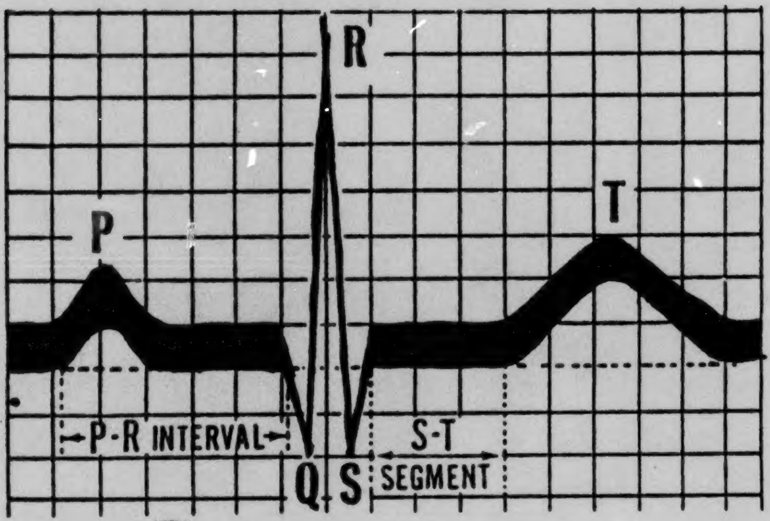


Diagram I

LEARNING ACTIVITIES - continued

8. Normal conduction (see Diagram II)

   The impulse begins in the SA node.

   a. It spreads through the atrial muscles

   b. which then contract. This is P-wave on the EKG. It crosses the atrioventricular node

   c. and passes down the bundle of His.

   d. This is the P-Q area. It then descends through the left and right bundle branches

   e. finally reaching the terminal Purkinje fibers.

   f. This causes ventricular contraction. After contraction, the ventricles rest and recover while they fill. The recovery period is the T-wave.

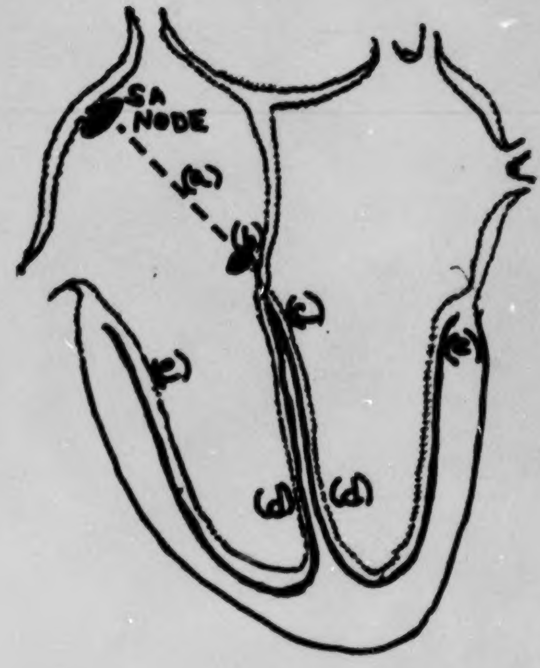


Diagram II

9. Relationship of the EKG to heart anatomy (see Diagram III)

   This diagram relates the deflections of the EKG to their origins in the heart. Let us imagine what happens if the normal sequence of events is disrupted. Regard the bundle branches as the dividing point; any disruption above this will affect the P and P-R; any disruption below it will affect the QRS.

   P-wave - When the normal S-A node stops acting as the "pacemaker" and some other focus in the atrial wall takes over, the P-wave is apt to be different.

   P-R Interval - If conduction through the atrium or the A-V node is slowed, the P-R interval is longer.

   QRS Complex - If an abnormal focus (or ectopic focus) appears in either ventricular wall, the shape of the QRS will be altered. However, if the ectopic focus is above the bundle branches (e.g. the atria or A-V node) then the ventricles would still be activated in the usual fashion and the QRS complex would remain the same.

LEARNING ACTIVITIES - continued

NOTE: Remember that the P and QRS shapes remain normal so long as the depolarization wave travels along normal pathways. Any abnormality in pacemaker or pathway will change the shape of the waves.

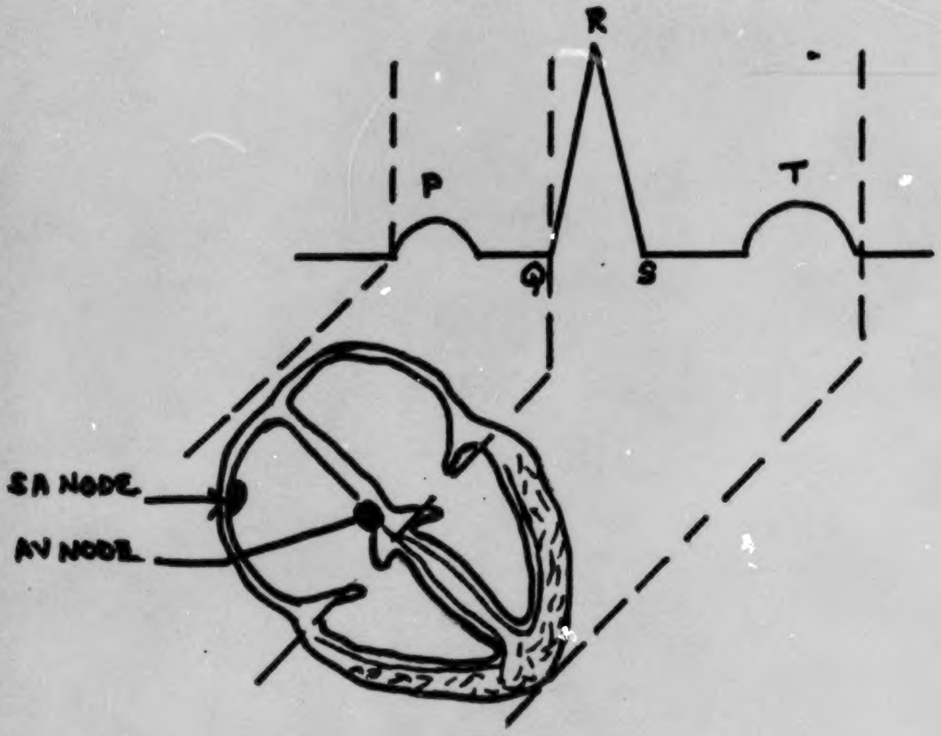


Diagram III

ACTIVITY #5. Anticoagulants and Heparin Antagonists

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
acenocoumarol	Sintram
dicumarol	Dufalone
*heparin sodium	Pan Heparin, etc.
*protamine sulfate	
warfarin potassium	Athrombin-K
*warfarin sodium	Coumadin

Anticoagulation therapy is directed toward preventing intravascular thrombosis by decreasing the blood's ability to coagulate. This therapy has no direct effect on a blood clot that has already formed or an ischemic tissue injured by an inadequate blood supply because of the clot.

LEARNING ACTIVITIES - continued

Major Uses

Anticoagulants are indicated in:

1. Occlusive vascular disease.
2. Sudden arterial occlusion.
3. Venous thrombosis.
4. Cerebrovascular thrombosis.
5. Pulmonary embolism.
6. Coronary artery occlusion or myocardial infarction.

Anticoagulants are used prophylactically in:

1. Major surgery when there is previous history of thrombosis or when prolonged immobilization will be necessary.
2. Pelvic surgery in both men and women, since pelvic surgery is notorious for its high incidence of postoperative thrombophlebitis.
3. Patients on bedrest for more than two or three days, since this situation predisposes them to vascular stasis.
4. Rheumatic heart disease.

Others:

1. Protamine sulfate neutralizes the effects of heparin.
2. Vitamin K neutralizes the effects of Coumadin.
3. Anticoagulants are used to prevent clotting of blood to be used for transfusion, laboratory or experimental work.

Side Effects

1. Bleeding tendencies such as hematuria
2. Epistaxis
3. Ecchymosis
4. Petechiae
5. Melena

LEARNING ACTIVITIES - continued

6. Blood dyscrasias as:
    a. leukopenia
    b. agranulocytosis

Nursing Considerations

1. Heparin may be given IV or sub q. To give heparin sub q, (see Diagram IV) bunch up a distinct roll of fat (without pinching) along the abdominal fat pad above the iliac crest and inject at a 90 degree angle. To avoid ecchymosis, rotate the injection sites and NEVER rub the site with the alcohol sponge because this increases the absorption time.

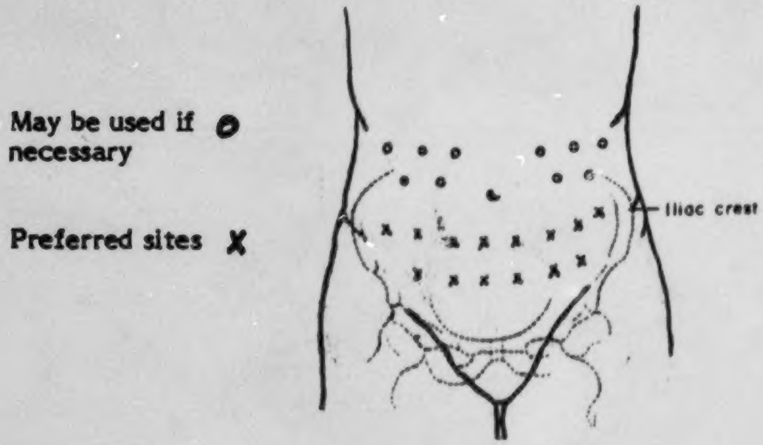


Diagram IV

2. The effects of heparin last about 5 hours with the peak occurring immediately after the drug has been given. The effects of oral anticoagulants, such as Coumadin, last about 5 days with the peak occurring at the end of 24 to 36 hours. For this reason, there is usually an overlap of these two drugs to ensure proper blood level of the oral drug.

3. Low-dose heparin or suboptimal doses of 5,000 units of heparin daily or every 12 hours may be given pre and postoperatively or to patients with activity restrictions to prevent thrombus formation.

4. When using heparin, measure partial thromboplastin times (PTT) regularly. Anticoagulation is present when PTT values are 1 1/2 to 2 times the control values. With the usage of Coumadin, protimes (PT) determinations are essential for proper control. The doctor will ususally try to maintain the PT at 1 1/2 to 2 times the normal.

LEARNING ACTIVITIES - continued

5. Regularly inspect the patient for any signs of bleeding, such as bleeding gums, petechiae, etc. Check the urine, vomitus and feces regularly for blood.

6. Protamine sulfate is the antidote for heparin toxicity; vitamin K is the antidote for Coumadin.

7. Coumadin should be given at the same time daily to maintain blood levels.

8. Salicylates such as aspirin, when given in combination with these anticoagulants, may increase the anticoagulant effects.

ACTIVITY #6. Hematinics

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
ferrous gluconate	Fegon, etc.
*ferrous sulfate	Feosol, etc.
*iron dextran	Imferon, etc.
iron sorbitol	Jectofer

Iron is a metallic element that is widely distributed in the body. It is found in the hemoglobin of the red blood cell and is essential to the normal transport of oxygen and to normal tissue respiration.

Iron deficiency results in a form of anemia in which the red blood cells are hypochromic (contain less hemoglobin, therefore having a low-color index) and are microcytic (smaller than normal). Iron deficiency anemia is associated with symptoms of low vitality, pallor of the skin and mucous membrane, fatigue and poor appetite.

Major Uses

1. The major ways of losing iron from the body to such an extent that anemia develops are by:

    a. blood loss resulting from a sudden acute large hemorrhage.

    b. a slow insidious loss as from menorrhagia.

    c. hemorrhoids.

    d. a silent ulcer.

    e. tumor of the GI tract.

LEARNING ACTIVITIES - continued

2. Iron is used prophylactically in:
    a. pregnancy.
    b. premature infants.
    c. patients whose diets contain inadequate amounts of iron.

Mechanism of action

Absorbed iron is taken up into the bone marrow tissues that form blood cells, where it is used to synthesize (make) hemoglobin.

Side Effects

1. Nausea
2. Anorexia
3. Headache
4. Vomiting
5. Constipation
6. Abdominal cramps

Nursing Considerations

1. When giving Imferon, only give it Z-Track into the upper, outer quadrant of the buttocks. NEVER give into the arm or other exposed area. (see Diagram V)

How to Inject Iron Solutions

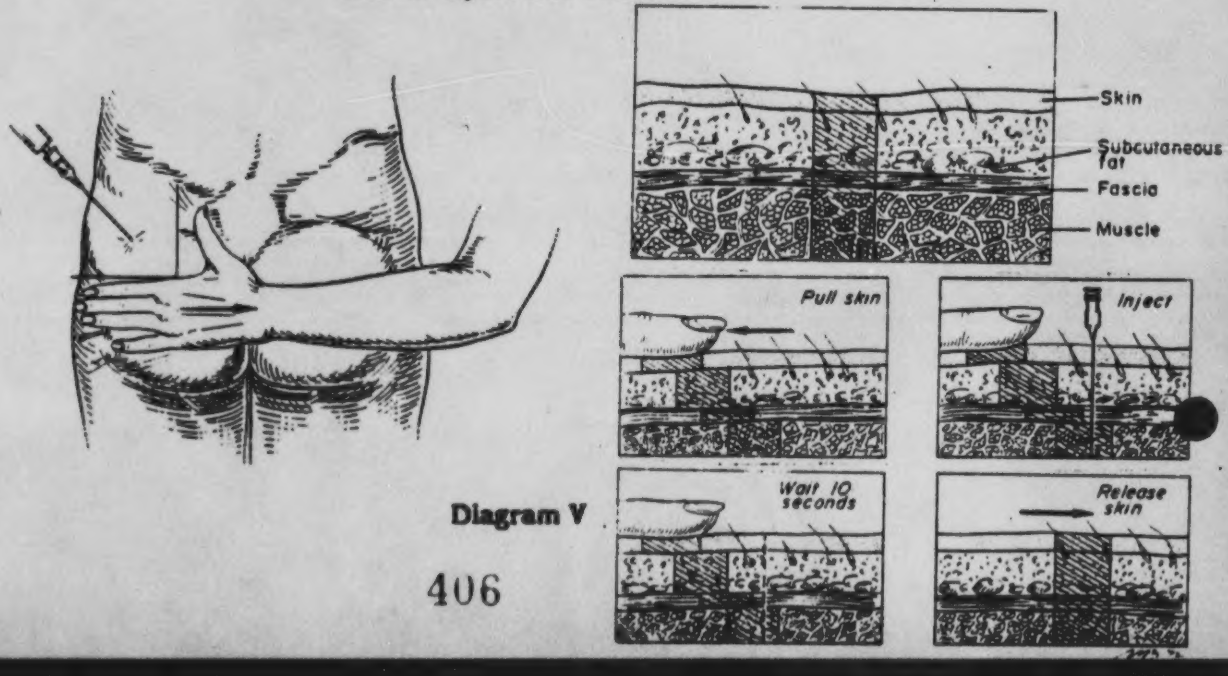

Skin
Subcutaneous fat
Fascia
Muscle
Pull skin
Inject
Wait 10 seconds
Release skin

Diagram V

LEARNING ACTIVITIES - continued

Use a 19 or 20 gauge, 1 1/2 to 3 inch needle (depending on the size of the patient). Change to a fresh needle after the medication is drawn up to avoid tracking the iron solution through to the subcutaneous tissue (which would take 1 to 2 years to be absorbed). Allow 0.5 ml of air in the syringe. Position the patient prone or laterally. Locate and expose the injection site. Inject medication into the upper, outer buttock quadrant. Displace the skin firmly to one side. Cleanse the area, insert the needle. Withdraw the plunger to check against entry into a blood vessel. Inject the medication slowly, followed by air in the syringe. Wait 10 seconds to prevent medication seepage from the site. Withdraw the needle, release the skin.

2. IM or IV injections of iron are advisable only for patients for whom oral administration is impossible or ineffective. A test dose of 0.5 ml is required before parenteral administration, as reactions ranging from severe pain to death are possible.

3. Iron is toxic; ingested overdose of iron preparation may cause death in children, so store in a safe place.

4. Inform the patient that he may have dark green or black stools. Check for constipation. (Refer to Module 19-D, Laxatives Under Nursing Considerations #3.)

5. GI upset is related to the dose. Between meal dosing is preferrable but doses may be given with some food even though absorption may be decreased. Liquid iron preparations may be diluted in juice or water, but not milk or antacid as they will interfere with the iron absorption. Do Not take within one hour of bedtime, as these agents are potentially corrosive.

ACTIVITY #7. Review Exercises

Directions: Complete the following questions. Answers can be found in the preceding information and in the PDR.

1. Atromid-S is a medication used in the treatment of ________________. Though a relationship has been shown to exist between atherosclerosis and high levels of blood lipids, treatment with ________________ drugs is at this time ____________________________________.

2. Two groups of vasodilators have been defined. They are:

   ______________________ & ______________________
   An example of a use for a drug from your first answer might be ______________ and an example of a use for a drug from your second answer might be ____________________.

3. Explain how you would administer the following medications.

   a. Nitrobid ointment 2% 1 1/2 inches Q4hrs:

   ____

LEARNING ACTIVITIES - continued

b. Nitrostat tabs 1/150 gr. prn chest pain: ____________________

c. Nitrobid capsule 2.5 mg Q8hrs. ____________________

4. Define digitalization.

____

____

5. List the medications from this module that require you take an apical pulse prior to administration. When do you hold these drugs and call the doctor?

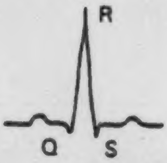
____

____

6. Digitalis toxicity may be revealed by what signs and symptoms.

____

7. A normal EKG might be represented by the following:



Briefly describe what the following represent:

a. P-wave: ____________________

b. PR interval: ____________________

c. QRS complex: ____________________

d. T-wave: ____________________

8. Uses for anticoagulants include:

____

____

____

LEARNING ACTIVITIES - continued

9. The doctor has ordered heparin 5000 units sub. q., Q12hrs. Describe how and where you will give this medication.

10. What lab considerations are important in the amount of heparin the doctor will order?

11. Absorbed iron is used by bone marrow tissues that form RBC's to make:

12. Imferon should be given Z-Track when ordered IM. Describe this technique:

13. List the usual dosages and routes for the following medications:

	DOSAGE	ROUTES
a. Atromid-S		
b. Persantine:		
c. Lanoxin:		
d. Inderal:		
e. Atropine:		
f. Heparin:		
g. Imferon		

LEARNING ACTIVITIES - continued

14. What discharge instructions would you give to patients going home on the following medications?

    a. Nitrostate tabs 1/150 gr p.r.n., chest pain: ____________________

    ____

    ____

    b. Digoxin 0.25 mg po QD: ____________________

    ____

    ____

    c. Coumadin 2.5 mg po QOD: ____________________

    ____

    ____

    d. Feosol tabs ī Q a.m. ____________________

    ____

    ____

ACTIVITY #8. How Calculating Are You?

Directions: Complete the following problems, showing your work, and turn in to your instructor at the beginning of the lecture "Drugs Used in the Treatment of Cardiovascular and Hematologic Disorders."

1. 0.001 x 1000 =
2. $2\overline{)\,0.5}$
3. 5 grain = ____mg
4. 1/6 grain = ____mg
5. Digoxin 0.25 mg = ____gram = ____grain
6. Demerol 75 mg = ____gram = ____grain
7. Butazolidan 300 mg = ____gram = ____grain
8. IV 1000 cc to run in 10 hours. Drip chamber delivers 15 gtts per cc _____cc/hr. _____gtts/min.

LEARNING ACTIVITIES - concluded

9. On hand - 2.5 mg in 1 cc
   Ordered: 0.5 mg

10. Dose ordered: grain 1/32
    On hand - grains 1/16 in 1 cc

11. Dose ordered: 4,000,000 units
    On hand - 10,000,000 units in 5 cc

12. Dose ordered: 2 grams
    On hand - 200 mg tablets

13. Dose ordered: 75 mg
    On hand - 100 mg in 5 cc

14. Dose ordered: 10 mg
    On hand - 50 mg in 10 cc

15. Dose ordered: X grain
    On hand - 32 mg tablets

PHARMACOLOGY

Module C, Part II - Medications Used in the Treatment of Respiratory Disorders

RATIONALE

In order to provide optimal nursing care you must understand how to prepare and administer medications to a patient with respiratory problems and understand how these medications can affect such a patient.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the classification of drugs commonly used in the treatment of respiratory disorders.
2. Identify side effects of drugs commonly used in the treatment of respiratory disorders.
3. Identify nursing considerations that relate to the treatment of respiratory disorders.
4. Identify major uses of selected drugs in the treatment of respiratory disorders.
5. Calculate and convert dosages for drug administration.
6. Demonstrate setup and administration of medications in the treatment of respiratory disorders when given an assignment in the clinical area.

LEARNING ACTIVITIES

Directions: All of the information needed to complete Module C and to pass the test is included in this module and the PDR (Physician's Desk Reference). Exercises have been designed to help you learn the material and focus on areas not specifically included (such as recommended dosages for individual drugs).

Since so many medications are included in this module, an effort has been made to simplify your study for the test by placing a star next to the more common drugs that may be included on the test.

You will gain a better understanding of these drugs if you first complete Module 17-C, Nursing Care for Patients with Disease of the Respiratory System.

Remember: Much of the information relating to these drugs is generalized and based upon the classification of the drug. Therefore, when giving a drug, LOOK UP EACH DRUG for its specific side effects, nursing considerations, action, uses and dosage.

LEARNING ACTIVITIES - continued

ACTIVITY #1. Respiratory Stimulants (Analeptics)

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*ammonia, aromatic spirits	
*carbon dioxide	
*doxapram HCL	Dopram
ethamivan	Emivan
nikethamide	Coramine
pentylenetetrazol	Metrazol

Respiratory movements are involuntary. The respiratory center in the medulla of the brain is affected by the chemistry and temperature of the blood supplying it. The level of carbon dioxide in the blood stimulates the respiratory center to activity. The amount of oxygen in the blood does not affect the respiratory center but affects chemoreceptors in the aorta and carotid arteries.

These drugs (except for ammonia) act directly on the medullary center to increase rate and tidal exchange. However, in the treatment of respiratory depression, airway management and support of ventilation are often superior treatments than use of these drugs, since respiratory stimulants in large doses are convulsants.

Major Uses

1. To combat effects of CNS depressants.

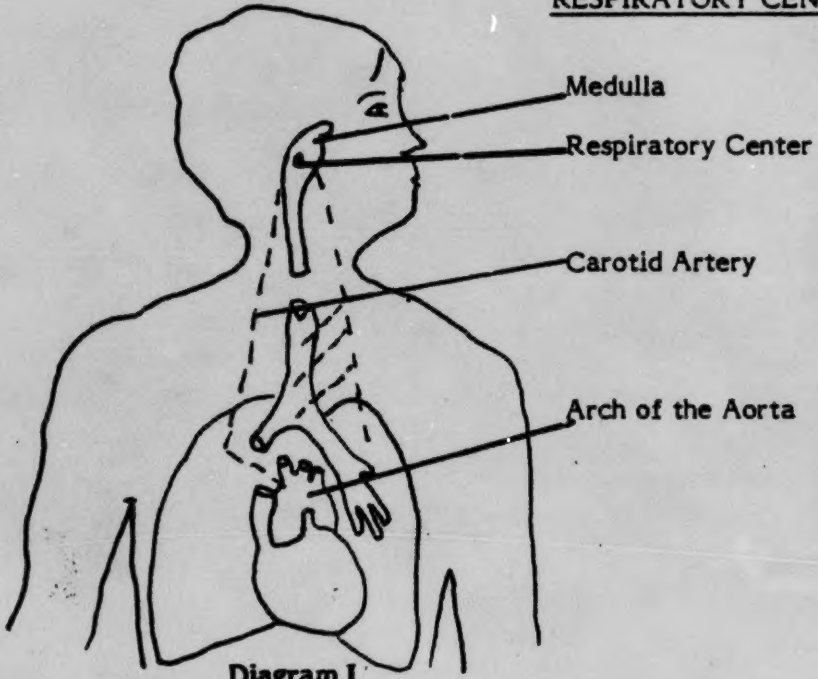
2. To stimulate respirations through peripheral irritation (ammonia).

3. To enhance physical and mental activity in elderly patients (Metrazol).

Mechanism of Action

1. These drugs act directly on the central respiratory centers in the medulla or indirectly by stimulating the carotid chemoreceptors. (See Diagram I)

LEARNING ACTIVITIES - continued


Medulla
Respiratory Center
Carotid Artery
Arch of the Aorta

RESPIRATORY CENTER

Sensitive chemoreceptors located in the medulla and in the walls of the arch of the aorta and carotid arteries mediate respiration.

Diagram I

Side Effects

1. Restlessness
2. Variations in heart rate
3. Nausea and vomiting
4. Flushing
5. Hypertension
6. Excessively deep and rapid respirations
7. Insomnia
8. Peripheral vasoconstriction

Nursing Considerations

1. Adequacy of airway and oxygenation must be assured before initiation of Dopram and Coramine therapy.

LEARNING ACTIVITIES - continued

2. Early signs of toxicity with Dopram and Coramine include:
    a. Tachycardia.
    b. Muscle tremor.
    c. Spasticity.
    d. Hyperactive reflexes.
3. Carbon dioxide by mask. A re-breathing mask may also increase the percentage of carbon dioxide, which is a natural stimulant. The carbon dioxide then triggers the response in the respiratory center.

ACTIVITY #2. Expectorants and Antitussives

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*acetylcysteine	Mucomyst
ammonium chloride	Amchlor
benzonatate	Tessalon
calcium iodide	
*codeine (phosphate or sulfate)	
*dextromethorphan hydrobromide	Pertussin 8hrs, Romilar Chewables, etc.
diphenhydramine hydrochloride	Benadryl
*guaifenesin	Robitussin, etc.
hydriodic acid	
*hydrocodone bitartrate	Hycodan, Hycomine
hydromorphone HCL	Dibudid cough syrup
iodinated glycerol	Organidin
noscapine	Tusscapine
*potassium iodide	SSKI (Saturated Soln of Potassium Iodine)
*terpin hydrate	Terp
tyloxapol	Alevaire

Antitussives depress or inhibit the cough reflex center of the medulla. They may be narcotic (e.g. codeine) or non-narcotic (e.g. Pertussin). They also soothe the throat and provide expectorant action or they may inhibit the cough by anesthetizing the stretch receptors in the lungs. Antitussives are frequently combined with expectorants.

Expectorants are drugs that increase or modify the secretion of mucous in the bronchi and reduce its viscosity, thereby facilitating the expulsion of secretions. They are used in the treatment of coughs, bronchitis and pneumonia.

LEARNING ACTIVITIES - continued

The mucolytics fall within the category of expectorants. These drugs reduce the viscosity of the pulmonary secretion and are usually given by nebulizer. They remove mucous plugs from the airway, treat chronic pulmonary disorders. They are useful in tracheostomy care, bronchoscopy and postop chest surgery. An example is Mucomyst.

Major Uses

1. Facilitates expectoration in:
   - a. Pneumonia.
   - b. Bronchitis.
   - c. TB.
   - d. Cystic fibrosis.
   - e. Emphysema.
   - f. Atelectasis.
   - g. Bronchial asthma.
2. Suppresses nonproductive coughs

Mechanism of Action

1. Expectorants increase respiratory tract fluids to help liquify and reduce viscosity of tenacious sputum, thereby allowing for easier expectoration.
2. Antitussives inhibit or suppress the cough reflex by directly affecting the cough center in the brain (codeine, Hycodan) by a local anesthetic effect (Tessalon) or by peripheral action on sensory endings.
3. The mucolytic agents reduce the thickness and stickiness of purulent and nonpurulent pulmonary secretions much the same as the expectorants.

Side Effects

1. Drug dependence
2. Respiratory depression
3. Drugs containing narcotics may cause bronchial constriction in patients with allergies or asthma.
4. GI irritation
5. Drowsiness
6. Dizziness

LEARNING ACTIVITIES - continued

Nursing Considerations

1. Increased humidity may decrease the need for mucolytics and antitussives.
2. Because many of these drugs are given to reduce local irritation, they should be administered without water unless otherwise directed by the physician. Adequate hydration is necessary, however, and fluids should be given in between times to help liquify secretions.
3. SSKI should be given well diluted with water or orange juice and by straw to prevent the potassium from discoloring the teeth. This drug should not be given to patients with hyperthyroidism.
4. Antitussives should not be given when retention of respiratory secretions or exudates may be harmful. The therapeutic objective is to decrease the intensity and frequency of the cough yet permit adequate elimination of tracheobronchial secretion and exudates.
5. Patient teaching should include the purpose of the natural cough and how to promote productive coughing. Coughing is a protective reflex for clearing the respiratory tract of environmental irritants, foreign bodies or accumulated secretions and thus should not be depressed indiscriminately. A cough is productive when irritants or secretions are removed from the respiratory tract; it is nonproductive when it is dry and irritating. Severe, frequent and prolonged coughing can be exhausing, painful and taxing to the circulatory system and the elastic tissue of the respiratory system.

To encourage productive coughing:

1. Instruct the patient in deep-breathing exercises.
2. Perform postural drainage if ordered by physician.
3. Limit or ban the patient's smoking.
4. Encourage patient to have adequate fluid intake.

To monitor and control the patient's cough:

1. Record the type and frequency of the cough.
2. Record the:
    a. Amount.
    b. Color.
    c. Odor.
    d. Consistency of sputum.

LEARNING ACTIVITIES - continued

3. Instruct the patient to cough into several layers of kleenex and to dispose of it in a paper bag.
4. Encourage the patient to report any side effects of prescribed expectorants and/or antitussives.

ACTIVITY #3. Antiasthmatics

Directions: Read the following.

This group of drugs includes agents that are primarily used in the treatment of:

1. Bronchial asthma.
2. Bronchitis.
3. Emphysema.

There are four major classes:

1. Xanthines (theophylline and its salts + dyphylline)
2. Adrenergics
3. Corticosteroids
4. Cromolyn sodium

XANTHINES

GENERIC NAMES	TRADE NAMES
*aminophylline or theophylline ethylenediamine	Aminodur Dura - Tab
dyphylline	Airet, Lufyllin
*oxtriphylline	Choledyl
*theophylline	Aerolate Bronkodyll, Elixophylline, Theodur, Theobid
theophylline ethanolamine	Fleet Theophylline Rectal unit

People have made beverages from aqueous extracts of alkloid-containing plants since ancient times. Xanthine relaxes smooth muscle (particularly bronchial muscle), stimulates cardiac muscle, the CNS and also produces diuresis. These drugs may be given orally, parenterally or rectally.

Major Uses

1. To relieve acute bronchial asthma and treat reversible bronchospasm associated with bronchitis and emphysema.

LEARNING ACTIVITIES - continued

2. May be useful in the treatment of Cheyne-Stokes respirations.

Mechanism of Action

These drugs relax spasms of the bronchi by decreasing muscle contractions. This helps reduce swelling and congestion of mucous membranes.

Side Effects

1. Restlessness
2. Dizziness
3. Headache
4. Insomnia
5. Palpitations
6. Tachycardia
7. Nausea and vomiting
8. Anorexia
9. Activation of peptic ulcer

Nursing Considerations

1. Due to GI distress, oral preparations are best administered with food or immediately following meals. The physician may also prescribe an antacid.
2. Dizziness is a relatively common side effect, particularly in the elderly. Take the necessary safety precautions and forewarn the patient of this possibility.
3. In the administration of these drugs, a narrow range exists between therapeutic dosage and toxicity. Therapeutic theophylline plasma levels range from 10 to 20 micrograms per milliliter. Levels exceeding 20 micrograms per milliliter are associated with toxicity. Early signs of possible toxicity include:
    a. Anorexia
    b. Vomiting
    c. Nausea
    d. Dizziness
    e. Wakefulness
    f. Restlessness
    g. Irritability

LEARNING ACTIVITIES - continued

4. Rectal preparations should be administered when the rectum is free of feces in order to increase the absorption of the drug. Also if rectal preparations are used, the onset of rectal irritation should be reported immediately.

5. Ephedrine given in conjunction with aminophylline has a combined central stimulant action and may necessitate the administration of a barbituate.

ADRENERGICS
(Sympathomimetics)

GENERIC NAMES	TRADE NAMES
*ephedrine sulfate	Slo-fedrin
epinephrine (inhalants)	Asthma meter, Bronkaid Mist Primatene Mist
epinephrine bitartrate (inhalants)	Asthma Haler, Medihaler-Epi
*epinephrine HCL	Adrenalin Chloride, Asmolin, Susphrine
ethylnorepinephrine HCL	Bronkephrine
*isoproterenol HCl	Isuprel
isoproterenol HCL (inhalants)	Iprenol, Vap-Iso Inhalation
*metaproterenol sulfate	Alupent, Metaprel
protokylol HCL	Ventaire
*pseudoephedrine HCL	Novafed, Sudafed, etc.
*terbutaline sulfate	Brethine, Bricanyl
isoproterenol sulfate	Iso - Auto Haler, Luf-Iso Inhalation

These agents are indicated in the presence of various pathophysiologic conditions resulting in intermittent and recurring bronchial constriction. Bronchial constriction, if prolonged and untreated, results in a disruption of the normal exchange of gases at the alveolar-capillary level.

A more detailed discussion of these agents may be found in Module E.

Major Uses

1. To relieve bronchoconstriction

2. To treat:

   a. Anaphylaxis and other allergic reactions

   b. Common asthmatic attacks

   c. Ophthalmic congestion (relief of)

   d. Local hemorrhage (control of)

   e. Delivery in premature labor (delay of)

LEARNING ACTIVITIES - continued

Mechanism of Action

Stimulates or increases the effect of epinephrine and nonepinephrine on alpha and beta adrenergic receptors within the sympathetic nervous system.

Effects vary and include:

1. Bronchodilation.
2. Release of glucose from the liver.
3. Increase heart rate and contractility of ventricles.
4. CNS excitation.
5. Dilation (beta effect) of the blood vessels in the skeletal muscles.
6. Constriction (alpha effect) of blood vessels in the cutaneous area.

Side Effects

1. Pallor
2. Nervousness
3. Anxiety
4. Increased heart rate
5. Pounding pulse
6. Arrhythmia
7. Hypertension
8. Increased respiratory rate
9. Inhibited gastric motility
10. Impeded urination
11. Sweating
12. Hyperglycemia

LEARNING ACTIVITIES - continued

Nursing Considerations

1. Medication errors associated with the administration of epinephrine may result in fatalities. For example:

   An injection of 1:100 solution intended for oral inhalation may be fatal if mistaken for 1:1000 solution designed for parenteral administration. Therefore, ALWAYS check the type of solution prescribed, concentration, dosage route and the ORDER ON THE CHART, not only the medex.

2. Epinephrine reduces bronchial secretions and thus may make mucous plugs more difficult to dislodge. Physicians may prescribe a bronchial hygiene program to help alleviate this. This may include:

   a. Postural drainage.

   b. Breathing exercises.

   c. Adequate hydration (3000 to 4000 cc/24 hours) to facilitate expectoration.

3. Isuprel when administered sublingually requires certain considerations.

   a. The patient should be instructed to allow the tablet to dissolve under the tongue without sucking and not to swallow the saliva (as it may cause epigastric pain) until the drug has been completely absorbed.

   b. If ordered, the sublingual tablet may be administered rectally.

   c. Prolonged use of sublingual tablets can damage teeth, possibly because of drug acidity and the patient should be advised to rinse the mouth with water between doses.

4. Patient instructions for administration by metered dose nebulizers should include the following:

   a. Place the mouthpiece well into the mouth.

   b. Aim at the back of the throat.

   c. Close lips and teeth around the mouthpiece.

   d. Exhale through the nose as completely as possible.

   e. Then inhale through the mouth slowly and deeply while activating nebulizer to release the dose.

   f. Hold breath several seconds.

   g. Remove mouthpiece.

   h. Then exhale slowly.

LEARNING ACTIVITIES - continued

5. The patient should be advised not to take OTC (over the counter) drugs concomitantly with these medications unless directed by the doctor.

CORTICOSTEROIDS

GENERIC NAMES	TRADE NAMES
*beclomethasone	Vaceril
hydrocortisone	Cortef
*hydrocortisone sodium succinate	Solu Cortef
methylprednisolone	Medrol
*prednisone	

For a more complete list of corticosteroids, please refer to Module F.

Corticosteroids include the hormones of the adrenal cortex. For the most part they can either be classified as glucocorticoids (which mainly affect carbohydrate and protein metabolism) and mineral-corticoids (which predominantly affect water and electrolyte metabolism). In the treatment of respiratory disease, they are commonly used for their anti-inflammatory and antiallergic properties. Steroid (corticosteroid) therapy is palliative and does not stop the progression of disease.

Major Uses

1. Disabling and rapidly progressive bronchial asthma that resists conventional therapy.
2. For other uses please see corticosteroids Module 19-F.

Mechanism of Action

These drugs operate by a variety of mechanisms. Two that are important in the treatment of respiratory disorders are:

1. The ability of the drug to help stabilize the cell membrane, inhibiting the release of proteolytic enzymes and thereby preventing the normal inflammatory response.
2. The ability of these drugs to interfere with the immune and allergic response by decreasing the number of lymphocytes, plasma cells and eosinophils in the blood.

Side Effects

1. Fluid and electrolyte imbalance
2. Hypertension
3. Negative nitrogen balance
4. Cushing syndrome
5. Impaired wound healing

LEARNING ACTIVITIES - continued

6. Masking of infections due to immunosuppression
7. Facial erythema
8. Increased perspiration
9. Change in skin pigmentation
10. Subcutaneous and cutaneous atrophy
11. Osteoporosis and muscle weakness
12. Euphoria
13. Psychosis
14. Increased intracranial pressure with papilledema
15. Vertigo
16. Headache
17. Convulsions
18. Increased appetite
19. GI bleeding
20. Ulcers
21. Menstrual irregularities
22. Suppression of growth in children
23. Diabetes
24. Cataract
25. Glaucoma
26. Exopthalmos
27. Buffalo hump
28. Hirsutism
29. Moonface

LEARNING ACTIVITIES - continued

Nursing Considerations

1. Prolonged therapy may cause adrenal insufficiency. To minimize this insufficiency and insomnia, give two-thirds of the daily dose before 10 a.m. and one-third of the dose in the afternoon. At NO time abruptly discontinue long-term corticosteroid therapy as adrenal insufficiency and Addison crisis may be precipitated (in some cases leading to death). Alternating days of therapy may reduce adverse reaction in long-term treatment. Short-term therapy (less than 7 days) with moderate doses (40 mg or less of prednisone or an equivalent) produces few side effects.
2. Infections and poor wound healing may be a problem during drug therapy. Watch closely for:
   a. Wound infections.
   b. Poor healing.
   c. Wound separation.
   d. Evisceration.
3. These medications are best taken with food, milk or antacid.

CROMOLYN SODIUM

GENERIC NAME	TRADE NAME
cromlyn sodium	Intal, Aarane

Cromolyn is a bronchial asthma prophylactic agent. It is not a broncho dilator, antihistaminic or anti-inflammatory drug. It appears to act primarily through a local effect on the lung mucosa.

Major Uses

As an adjunct in treating patients with severe perennial bronchial asthma.

Side Effects

1. Rash
2. Urticaria
3. Occasional cough and bronchospasm

Nursing Considerations

1. Cromolyn sodium is a useful adjunct in the management of asthma but is of no value in treating an acute attack. For maximum benefit, the patient should be instructed to take it regularly and as prescribed.

LEARNING ACTIVITIES - continued

2. Advise the patient to clear as much mucous as possible before using inhaler.

3. Caution the patient not to exhale into inhaler because moisture from breath will interfere with proper operation. The patient should also be informed that the capsule is intended for inhalation and is ineffective if swallowed.

ACTIVITY #4. Antibiotics

Directions: Read the following.

Antibiotics are often used in respiratory diseases. Some are used specifically to treat certain bacterial infections and others are used prophylactically to prevent infections.

Please refer to Module 19-K for specific information.

ACTIVITY #5. Antihistamines

Directions: For specific information on antihistamines refer to Module L.

ACTIVITY #6. Review Exercises

Directions: Answer the following questions. Answers can be found by rereading the preceding information and using the PDR.

1. Go to a drugstore or grocery store and make a list of cough medications, including the following information:

Brand Name　　Active Ingredients　　Desired Action

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

e. ______________________________

2. Fred Moreno has asthma and chronic bronchitis and has been treating himself with OTC drugs. What type of patient teaching would you provide him with?

____

____

____

LEARNING ACTIVITIES - continued

3. Sara Sampson has had chronic bronchitis since childhood. You've had her in the hospital this admission for three weeks. She complains that her coughing has kept her awake for the last three nights and wants something to relieve it. From your list of antitussives and expectorants, choose which drug(s) would be most effective for this condition.

____

____

4. Robert came in 2 days ago with an acute exacerbation of his COPD. His doctor started him on IV therapy consisting of 1000 cc of 5% dextrose in 0.2 normal saline with 1 gram of aminophylline + 100 mg of Solu Medrol to infuse in at 70 cc per hours. He has been receiving IPPB treatments every 4 hours with Bronkosol. He also receives 500 mg of Keflin IVPB every 6 hours. This a.m. you notice that his complexion is ruddy, and he has complained of nausea throughout the night. After being served his breakfast tray and talked into taking a sip of coffee, he promptly has an emesis of 150 cc of yellowish tenacious material. You also notice his bed clothing is torn apart and he does not seem to remain in one position for any period of time. He tells you he feels worse than before he came into the hospital and, in tears, asks you to please help him.

What is your assessment of the situation?

____

____

____

What is your plan of action?

____

____

____

5. What discharge instructions would you include for patients going home on any of the following medications?

   a. SSKI 10 gtts q.i.d. PO: ________________________

   ____

   ____

   b. Hycodan syrup 5 cc Q4hrs p.r.n.: ____________________

   ____

   ____

LEARNING ACTIVITIES - continued

c. Vanceril 2 puffs q.i.d.: ______________________________

____

____

d. Aminophylline 200 mg PO q.i.d.: ______________________________

____

____

6. Indicate the usual dosages and routes for the following drugs:

a. Dopram:	____________	____________
b. Terpin hydrate:	____________	____________
c. Choledyl:	____________	____________
d. Epinephrine:	____________	____________
e. Cromolyn sodium:	____________	____________
f. Aminophylline:	____________	____________

ACTIVITY #7. How Calculating Are You?

Directions: Complete the following problems, showing your work, and turn in to your instructor at the beginning of the lecture "Drugs Used in the Treatment of Respiratory Disorders."

1. 0.5 x 3.5 =
2. $0.007\overline{)37.6}$
3. 900 mg = ____grams
4. $FeSO_4$ 300 mg = ____grams
5. Cascara 1 tsp. = ____cc = ____ʒ= ____ʒ
6. Atromid 500 mg = ____gram = ____grain
7. Ritalin 5 mg = ____gram = ____grain
8. IV - 500 cc to run in over 10 hours. Drip chamber delivers 60 gtts/cc ____cc/hr. ____gtts/min.
9. On hand - grain XV in each tablet
   Ordered: 1800 mg

LEARNING ACTIVITIES - concluded

10. Dose ordered: grain 1/8
On hand - grain 1/4 in 1 cc

11. Dose ordered: 2,500 units.
On hand - 10,000 units in 1 cc

12. Dose ordered: 0.75 mg
On hand - 1 mg in 1 cc

unit 19

PHARMACOLOGY

Module D, Part II - Medications Used in the Treatment of Gastrointestinal Disorders

RATIONALE

In order to provide optimal nursing care you must understand how to prepare and administer medications to a patient with gastrointestinal disorders. You must also understand how these medications can affect the patient.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the classification of drugs commonly used in the treatment of gastrointestinal disorders.
2. Identify side effects of drugs commonly used in the treatment of gastrointestinal disorders.
3. Identify nursing considerations that relate to the administration of drugs used in the treatment of gastrointestinal disorders.
4. Identify major uses for selected drugs in the treatment of gastrointestinal disorders.
5. Calculate and convert dosages for drug administration.
6. Demonstrate setup and administration of medications in the treatment of gastrointestinal disorders.

LEARNING ACTIVITIES

Directions: All of the information needed to complete Module D and to pass the test is included in this module and the PDR (Physicians Desk Reference). Exercises have been designed to help you learn the material and focus on areas not specifically included (such as recommended dosages for individual drugs).

Since so many medications are included in this module, an effort has been made to simplify your study for the test by placing a star next to the more common drugs that may be included on the test.

You will better understand these drugs if you first complete Module 17-D, "Nursing Care for Patients with Diseases of the Gastrointestinal System."

REMEMBER: Much of the information relating to these drugs is generalized and based upon the classification of the drug. Therefore, when giving a drug, LOOK UP EACH DRUG for its specific side effects, nursing considerations, action, uses and dosage.

LEARNING ACTIVITIES - continued

ACTIVITY #1. Adsorbents and Antiflatulents

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
activated charcoal	Charcotabs, Charcodote
simethicone	Mylicon

Adsorbents (activated charcoal, specifically) effectively inhibit GI adsorption of a wide variety of drugs, chemicals and toxins. Substances not adsorbed by activated charcoal include:

1. Cyanides
2. Ethanol
3. Methanol
4. Iron
5. Salt
6. Corrosive alkalis
7. Mineral acids
8. Organic solvents

Antiflatulents are mild irritant drugs that increase the motility of the GI tract, thus aiding in the expulsion of flatus from the stomach and intestines.

Major Uses

1. Adsorbents serve as general purpose antidotes in certain acute oral poisonings.
2. Antiflatulents relieve painful symptoms of excess flatus in the digestive tract.

Mechanism of Action

1. Adsorbents adhere to a wide variety of drugs and chemicals, thereby inhibiting the absorption of these agents from the GI tract.
2. Antiflatulents (e.g. Mylicon) use defoaming action to disperse the formation of mucous-surrounded gas pockets in the GI tract. They act in the stomach and intestines to form a film that causes gas bubbles to collapse.

LEARNING ACTIVITIES - continued

Side Effects

1. Mylicon
    a. Excessive belching
    b. Rectal flatus
2. Activated Charcoal
    a. Black stools

Nursing Considerations

These drugs should not be used indiscriminately.

ACTIVITY #2. Antacids

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
aluminum carbonate	Basaljel
*aluminum hydroxide	Amphojel
aluminum phosphate	Phosphaljel
calcium carbonate	Titralac, Tums
dihydroxyaluminum sodium carbonate	Rolaids
*magaldrate	Riopan
*magnesium magma magnesium hydroxide	Milk of Magnesia (MOM)
oxethazaine	Oxaine
*sodium bicarbonate	Baking soda, Soda Mint

Antacids are chemical substances used in the treatment of hyperchlorhydria and peptic ulcer. There are two types of antacids:

1. Systemic - Systemic antacids neutralize the hydrochloric acid of the stomach, and leaving the stomach, are absorbed in the blood stream through blood vessels of the duodenum.

    Problems with the use of systemic antacids include:

    a. Acid rebound, in which the presence of a strong alkalai prompts the gastric cells to create more acid in an attempt to neutralize the alkalai.

    b. Hypernatremia, which may be a problem for those with cardiac disease.

    c. Perforation of peptic ulcer with misuse of sodium bicarbonate and agents that fizz.

LEARNING ACTIVITIES - continued

2. Nonsystemic - antacids form relatively insoluble compounds after combining with the hydrochloric acid of the stomach that is not readily absorbed. Because they have no direct effect on the acid-base balance of the blood, they are unlikely to cause alkalosis.

Major Uses

1. Gastric hyperacidity causes symptoms of fullness after eating, gastric distention, belching (eructation) and heartburn. Antacids relieve these symptoms.

2. Peptic ulcer is a localized destruction of the GI mucosa occuring usually in the stomach or duodenum. If the ulceration continues to be bathed in gastric juice, continued erosion may occur and lead to perforation. Neutralizing or buffering the gastric acid helps to promote healing and relieve pain.

Mechanism of Action

Antacids generally work by reducing total acid load in the GI tract and elevating intragastric pH to reduce activity of pepsin. They also strengthen the gastric mucosal barrier and increase the tone of the lower esophageal sphincter. They do not appear to have a coating effect on ulcers.

Side Effects

1. Anorexia

2. Diarrhea with magnesium containing antacids

3. Constipation with most other antacids

4. Intestinal obstruction

5. Flatulence

Nursing Considerations

1. One danger of antacid overuse or usage without medical advise is the possibility of disguising more serious GI disorders (e.g. cancer of the bowel causes a change in elimination habits).

2. Antacids taken before, with or after some drugs (e.g. tetracycline) can interfere with drug action.

3. The physician often orders the antacid to be left at the bedside. Important considerations include:

    a. Always having a supply of the antacid and med cups at the bedside.

    b. Making sure the patient fully understands when to take and how much of the drug to take and how to measure the dosage.

    c. Making sure the patient has a clock or watch.

LEARNING ACTIVITIES - continued

4. Some antacids cause constipation while others cause diarrhea. If a patient is receiving antacids hourly, the patient could develop one or the other condition unless antacids are alternated. (e.g. Give Amphojel, which has a tendency to produce constipation, one hour and then give Gelusil, which has a tendency to produce diarrhea, the next hour).

5. A nonsystemic antacid should be well shaken and given with only enough water to wash it from the esophagus. The medication is only effective while in the stomach.

6. Instillation of medication through the Levine tube:

   a. The first step is checking the tube for successful stomach entry.

   b. Connect a catheter-tip syringe to the tube.

   c. Then place your stethoscope over the patient's epigastric region.

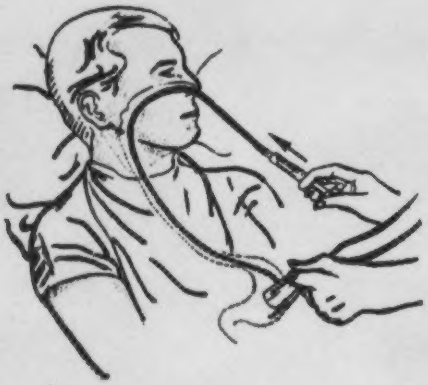
   d. Squeeze the syringe.

   e. Inject about 5 cc of air and listen for a "hoosh" in the stomach. This should assure you that the levine tube is in place.

   f. Attach an irrigating syringe, with plunger removed, to the Levine tube and pour in 5 cc of water.

   g. Instill the medication (diluted if necessary) and allow it to flow in by gravity.

   h. Insert 5 cc of water to follow and clamp the Levine tube for 15 to 20 minutes.



LEARNING ACTIVITIES - continued

ACTIVITY #3. Anthelmintics

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
Antimony Potassium Tartrate	
*gentian violet	Jayne's PW Vermifuge
mebendazole	Vermox
*piperazine	Peperazinal
pyrvinium pamoate	Pamovin, Vanquin
*quinacrine HCL	Atabrine
thiabendazole	Mintezol

Anthelmintics are drugs used to rid the body of worms. An estimated one-third of the world's population is infested with these parasites. Helminths (worms) may be present in the GI tract or penetrate the tissues. Some undergo developmental changes during which time they wander extensively in the host.

Because most of these drugs are specific to certain types of helminths, the particular organism must be identified before treatment is started.

Major Uses

These drugs are used for the eradication of various species of worms. Worms that are parasitic to people are classified as cestodes (tapeworms), nematodes (round, unsegmented worms) and trematodes (flukes).

Cestodes

There are four types of cestodes found in people:

1. The beef tapeworm
2. The pork tapeworm
3. The fishworm
4. The dwarf tapeworm

These parasites enter the intestines from improperly cooked or contaminated food. The segmented flatworms have a head and a number of segments that can extend 20-30 feet in the bowels.

Nematodes

Nematode species include:

1. Roundworm
2. Two types of hookworm
3. Whipworm

LEARNING ACTIVITIES - continued

4. Trichina

5. Pinworm

These parasites vary in length from a fraction of an inch to a foot or longer.

Trematodes

Trematodes that are parasitic to humans include several blood flukes that live in the veins of the mesentery and the pelvis. They mainly involve the liver and spleen.

Mechanisms of Action

The anthelmintic mechanism of action varies from drug to drug, and in some cases is unknown. For example, Atabrine causes the organ of attachment of the worm to temporarily detach from the intestinal wall, allowing the worm to be removed by purging. Piperazine works by seemingly inducing a state of narcosis and paralysis in the worms that allows them to be expelled by intestinal peristalsis in the patient.

Side Effects

1. Nausea

2. Vomiting

3. Diarrhea

4. Anorexia

5. Urticaria

6. Arthralgia

Nursing Considerations

1. Instruct patient in good hygiene technique to prevent reinfestation. For example, with pinworm or roundworm, the perianal areas should be washed daily, as well as bed linens and under garments. Instruct patient to wash hands and clean fingernails after each b.m. and before each meal.

2. The patient using gentian violet should be aware that skin, clothing, vomitus and fecal material will be stained purple; and using Pamovin or Vanquin a bright red stain will result.

3. After using Atabrine, a saline cathartic is necessary to dispel the worms. The bitter taste of this medication may be disguised by jam or honey.

LEARNING ACTIVITIES - continued

ACTIVITY #4. Antidiarrheals

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
bismuth subgallate	Pepto Bismol
bismuth subsalicylate	Pepto Bismol
*diphenoxylate HCL (with atropine)	Lomotil (controlled substance - V)
kaolin and pectin mixtures	Kaopectate, Kaopectin
*lactobacillus	Bacid
loperamide HCL	Imodium (controlled substance - V)
*opium tincture	Paregoric (controlled substance - V)
opium tincture, camphorated	Paregoric (controlled substance - V)

Diarrhea is a symptom, not a disease. The remedies ordered to relieve diarrhea are selected according to the cause of the symptom. The causes may be many and varied and include:

1. Eating contaminated or partially decomposed food.
2. Bacterial or protozoan infection.
3. Nervous disorders.
4. Disturbances of gastric physiology such as:
   a. The absence of hydrochloric acid.
   b. The effects of resectional surgery of the stomach.
5. Inflammatory process of the intestines or adjacent viscera.
6. The effect of certain drugs in the intestine.

Major Uses

1. Treatment of acute, mild or chronic nonspecific diarrhea.
2. Pepto Bismol also acts as deodorizer for fecal odors in colostomy and ileostomy patients.
3. Imodium also reduces the volume of ileostomy discharge.

LEARNING ACTIVITIES - continued

Mechanisms of Action

Generally these medications work by decreasing the fluidity of the stool and thus the frequency of defecation. In addition, drugs such as the bismuth salts absorp toxins and provide a protective coating for intestinal mucosa.

Side Effects

Vary from drug to drug, but may include:

1. Drowsiness.
2. Dizziness.
3. Nausea and vomiting.
4. Constipation.
5. Physical dependency with prolonged usage of opium tincture.

Nursing Considerations

1. Bismuth, kaolin and pectin mixtures may reduce the absorption of the oral drugs, thus requiring the doctor to make adjustments.
2. Bacid needs to be stored in the refrigerator.
3. Discourage long-term or unsupervised usage of these drugs.
4. Since there are numerous possible causes of diarrhea, effective treatment depends on discovering the cause and removing it if possible. Medications should not be given or used indiscriminately until the cause has been determined.

ACTIVITY #5. Digestants

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
bile salts	Chobile, Biso
dehydrocholic acid	Bio-Choline, Idrocrine
*glutamic acid HCL	Acidulin
*hydrochloric acid (HCL), diluted 10%	
ketocholanic acids	Ketochol
*pancreatin	Viokase
*pancrelipase	Cotazyme, Ilozyme

LEARNING ACTIVITIES - continued

Digestants promote digestion and constitute replacement therapy for patients in deficiency states. In healthy persons, they are used to diminish intestinal gas. Digestants include HCL, bile salts and enzymes (alcoholic beverages also serve as digestants).

Major Uses

1. Bio-Choline and Ketochol are synthetic bile salts used as an adjunct in:
    a. Treatment of recent or recurrent bilary-tract surgery.
    b. Biliary dyskinesia.
    c. Chronic partial obstruction of the common bile duct.
    d. Prolonged drainage from biliary fistules or T-tube drainage of infected bile duct and sclerosing choledochitis.
    e. Preventing bacterial accumulation following biliary-tract surgery and partial obstruction of the common bile duct.
2. Bile and bile salts aid in the digestion and absorption of fats and fat-soluble vitamins (ADEK). Bile salts are used in uncomplicated constipation and play an important role in maintaining the normal solubility of cholesterol in the bile.
3. Gastric acidifiers such as Acidulin, hydrochloride and diluted HCL are used in treating hypochlorhydria and achlorhydria that are caused by organic diseases such as:
    a. Pernicious anemia.
    b. Certain allergies.
    c. Chronic gastritis.
    d. After gastric resection.
4. Enzymes such as pancreatin (Viokase) and pancrelipas (Cotazym) are used in exocrine pancreatic secretions insufficiency.

Mechanism of Action

1. Bile salts and synthetic bile salts stimulate the flow of bile from the liver to aid normal digestion and absorption of fats and fat-soluble vitamins and cholesterol.
2. HCL and glutamic acid replace gastric acid.

Side Effects

1. Diarrhea (with bile salts, pancreatin and pancrelipase)
2. Nausea (with bile salts, pancreatin and pancrelipase)
3. Tooth enamel damage (with HCL)

LEARNING ACTIVITIES - continued

Nursing Considerations

1. HCL must be given by a straw to prevent tooth decay. It is best to give before meals and have patient rinse mouth well with an alkaline solution after.
2. Viokase and Ilozyme come in enteric-coated tabs to prevent destruction from GI juices. They bypass the stomach and work in the small intestines.

ACTIVITY #6. Emetics and Antimetics

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
EMETICS:	
*apomorphine HCL (control substance - II)	
*emetine	Ipecac
ANTIEMETICS:	
*benzquinamide HCL	Emete Con
cyclizine lactate	Marezine
*dimenhydrinate	Dramamine
diphenidol	Vontrol
meclizine HCL	Antivert, Bonine
*prochlorperazine	Compazine
thiethylperazine maleate	Torecan
*trimethobenzamide HCL	Tigan

Emetics are agents given to induce vomiting after the ingestion of poisons when prompt evacuation of the stomach is necessary. Although emetics should be given immediately, they can still be useful even if administration is delayed. These drugs should NEVER be given if the material swallowed is:

1. Caustic (lye).
2. Kerosene.
3. Cleaning fluid.
4. Paint thinner.
5. Fuel oil.
6. The patient is:
    a. Unable to swallow.

LEARNING ACTIVITIES - continued

b. Unconscious.

c. Semi-conscious.

d. Extremely restless.

e. Hyperventilating.

Antimetics are medications given to produce symptomatic relief of nausea and vomiting. Effective treatment usually depends on treating the cause of vomiting. Vomiting may result from:

1. Strong emotion.
2. Severe pain.
3. Increased intracranial pressure.
4. Labyrinthe disturbances.
5. Motion sickness.
6. Endocrine disturbances.
7. Toxic reaction to drugs.
8. GI pathology.
9. Pregnancy.
10. Reaction to roentgen treatments and chemotherapy.

Major Uses

1. Emetics induce vomiting, preventing the ingestion of toxic substances.
2. Antiemetics are used in the treatment and prevention of nausea and vomiting.

Nausea and vomiting occur when the emetic center (located in the medulla) has been stimulated. The emetic center, also known as the true vomiting center (TVC), is both a motor and a reflex center that regulates and coordinates the sequence of events associated with vomiting.

Side Effects

Emetics - with Ipecac

1. Cardiac disturbances
2. Atrial fibrillation or fatal myocarditis if the drug is not vomited within minutes

LEARNING ACTIVITIES - continued

With apomorphine HCL

1. CNS depression
2. Euphoria
3. Tachycardia

Antiemetics

1. Drowsiness
2. Dizziness
3. Dry mouth
4. Blurred vision
5. Some potentiate the effects of narcotics or barbituates

Nursing Considerations

Antiemetics

1. Warn the patient not to drive a car or engage in other dangerous activities until response to the drug has been determined.
2. Suppositories should be stored in the refrigerator.
3. Avoid mixing parenteral preparations of Dramamine and Compazine with other drugs as they are incompatible with many solutions.
4. Caution the patient that sedative action may be increased when antiemetics are used with:
    a. Alcohol.
    b. Barbituates.
    c. Narcotic analgesics.
    d. Other CNS depressants.

Emetics

1. Ipecac syrup should not be confused with Ipecac fluid extract, which is 14 times stronger and has caused deaths when mistakenly given in the same dosage as Ipecac syrup.
2. Activated charcoal should not be given simultaneously with syrup of Ipecac as it renders it ineffective.

LEARNING ACTIVITIES - continued

3. Doctors often recommend that an ounce of Ipecac syrup be bought and stored in the home when a child becomes one year old. Then it is readily available in case of emergency.

ACTIVITY #7. Gastrointestinal Anticholinergics

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
anisotropine methylbromide	Valpin-50
*atropine sulfate	
belladonna alkaloids	Prydon Spansules
*belladonna leaf	Belladonna Tincture
levorotatory alkaloids of belladonna	Bellafoline
*dicyclomine HCL	Antispas, Bentyl
diphemanil methylsulfate	Prantal
*glycopyrrolate	Robinul, Robinul Forte
hyoscyamine sulfate	Anaspaz
isopropamide iodide	Darbid
mepenzolate bromide	Cantil
methixene HCL	Trest
*oxyphencyclimine HCL	Daricon
*propantheline bromide	Probanthine
thiphenamil HCL	Trocinate
tridihexethyl chloride	Pathilon

Anticholinergic agents are often used to help relieve the pain associated with peptic ulcers. They inhibit GI smooth-muscle contraction and delay gastric emptying time, thus enhancing the action of antacids. These agents should not be used alone or even as the basis of treatment, but should be part of a total therapeutic program. There is no concrete evidence that they help in healing peptic ulcers.

Major Uses

1. Adjunctive treatment of peptic ulcers (specifically, the associated pain)
2. Irritable bowel syndrome (spastic colon, mucous colitis and acute enterocolitis) and other functional GI disorders and neurogenic bowel disturbances (splenic flexure syndrome and neurogenic colon).

Mechanism of Action

1. Anticholinergics block the vagus nerve, thus inhibiting secretion of gastric juices and reducing the motility of the GI tract.

LEARNING ACTIVITIES - continued

Side Effects

1. Headache
2. Insomnia
3. Drowsiness
4. Dizziness
5. Confusion or excitement
6. Palpitations
7. Tachycardia
8. Blurred vision
9. Dry mouth
10. Nausea
11. Vomiting
12. Constipation
13. Impotence
14. Urinary hesitency and retention
15. Urticaria
16. Fever
17. Allergic reactions

Nursing Considerations

1. Administer 30 minutes to 1 hour before meals.
2. Instruct patients not to drive a car or operate dangerous machinery if they experience drowsiness, dizziness or blurred vision; to drink adequate fluids to help prevent constipation; to chew gum or suck on hard sugarless candy to relieve dryness of mouth and to report any skin rash or local eruption.
3. Contraindicated in patients with narrow-angle glaucoma because of increased intraocular pressure.
4. Pilocarpine and physostigmine are physiologic antidotes for atropine poisoning.

LEARNING ACTIVITIES - continued

5. Because urinary retention may be a problem with these drugs, a baseline 24 hour urinary output should be established prior to initiation of therapy. Thereafter, a daily output should be monitored. Having the patient void before a scheduled dose may also be helpful.

6. Caution the patient to avoid high environmental temperatures, as heat prostration can occur as a result of decreased sweating.

ACTIVITY #8. Laxatives (Cathartics)

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
Bulk Formers:	
barley malt extract	Maltsupex
*bran	
agar	
psyllium seed	Metamucil
methyl cellulose	Cologel
Emollients:	
mineral oil	
Salines:	
magnesium sulfate	Epsom Salts
*sodium biphosphate	Milk of Magnesia
sodium phosphate	Phospha Soda
Stimulants:	
*bisacodyl	Dulcolax
*cascara sagrada	Cascara
*castor oil	Neoloid
*danthron	Modane
phenolphthalein	Ex-Lax, Feen-a-Mint
*senna	Senokot, X-Prep
Wetting Agents (Stool Softeners)	
*dioctyl calcium sulfosuccinate	Surfak
dioctyl potassium sulfosuccinate	Rectalad Enema
*dioctyl sodium sulfosuccinate	Colace

Laxatives (cathartics) are drugs administered to induce defecation and to relieve constipation. However, they are frequently abused.

LEARNING ACTIVITIES - continued

Constipation is a functional impairment of the bowel that prevents it from producing stools of normal consistency and frequency. Chronic constipation is sometimes caused by organic disease such as:

1. Tumors (which may produce an obstruction of the bowel).
2. Megacolon.
3. Hypothyroidism.
4. Anal and rectal disorder.
5. Diseases of the liver and gallbladder.

However, many persons complain of constipation when no organic problem can be found.

Major Uses

1. In geriatric patients.
2. In preparation of the abdominal viscera prior to x-ray examination or surgery.
3. To secure a stool specimen to be examined for parasites (saline cathartics).
4. To expel parasites and toxic anthelmintics.
5. In children with megacolon.
6. Postoperatively.
7. To overcome decreased motility of the intestines caused by drugs such as:
    a. morphine.
    b. codeine.
8. In cases of food or drug poisoning to promote the elimination of these substances from the GI tract (saline cathartics).
9. To relieve constipation during pregnancy or the postnatal period.
10. To keep the stool soft when it is essential to avoid irritation or straining, such as with:
    a. aneurysms.
    b. after a hernia repair or TURP.

Mechanism of Action

1. Bulk laxatives hydrate the stool, increasing the bulk and water content, which promotes peristalsis.
2. It appears that castor oil may stimulate water and electrolyte secretion to increase fecal movement.
3. The action of senna, cascara and Modane is unknown.
4. Surfax is a surface active agent with detergent activity. It lowers surface tension of the stool, thereby allowing fecal material to be penetrated by fat and water.
5. Saline laxatives work by drawing water into the intestines in large quantities, thereby increasing peristalsis. These agents work in one or two hours after administration.
6. Ex-Lax and Dulcolax produce irritation in the large colon.

Side Effects

1. Nausea
2. Vomiting
3. Diarrhea
4. Abdominal cramping
5. Loss of normal bowel function or laxative dependency may occur with chronic use of any laxative.

Nursing Considerations

1. These agents should not be given to any patient with nausea, vomiting or abdominal pain unless the doctor is completely aware of these symptoms.
2. Surface wetting agents or stool softeners are the drug of choice for cardiac patients.
3. Use the following information to teach your patients how they can avoid or alleviate constipation.
    a. Get sufficient rest, at least 6 hours a night.
    b. Incorporate moderate exercise into your daily routine. Even walking will do; just don't be sedentary.
    c. Drink at least 8 to 10 glasses of liquid every day. Fluids help keep the intestinal contents in a semisolid state for easier passage. Before breakfast or in the evening, try drinking hot or cold water, plain or with lemon, for bowel stimulation. Prune juice also works well.

LEARNING ACTIVITIES - continued

d. Your diet should have enough fiber (see the fiber chart following this material) to contribute bulk to the intestines and induce peristalsis. Your richest source of fiber is whole-grain cereals and bran. But be careful; too much bran can create irritable bowel. When buying breakfast cereals, look for ones with bran in the title or, better yet, read the label for fiber content.

(1)	Low fiber	0.3 - 1	gram
(2)	Moderate	1.1 - 2.0	grams
(3)	High	2.1 - 4.2	grams

Whole wheat and whole rye are good bread choices. Some cereals to include are:

(1) Oatmeal
(2) Rolled oats
(3) Bran flakes
(4) Granola
(5) Grape nuts
(6) Shredded wheat
(7) Wheat flakes
(8) Brown rice

e. Use fat-containing foods, such as bacon, butter, cream and oil in moderation. They produce sufficient bulk, but they sometimes cause diarrhea. If you are on a low-fat diet, you should avoid these foods anyway.

f. Include an abundance of both raw and cooked vegetables and fruits in your diet.

(1) Carrots
(2) Apples
(3) Oranges
(4) Lettuce
(5) Stewed fruit
(6) Potatoes cooked in skin

g. Avoid highly refined foods such as:

(1) White rice
(2) Cream of wheat and farina
(3) White pastries
(4) Pies and cakes
(5) Spaghetti
(6) Noodles
(7) Ice cream

h. If you have any special problems or questions, do not hesitate to call your doctor.

LEARNING ACTIVITIES - continued

Fiber Content of Some Common Food Sources

(Grams of fiber per 1/4 cup)

Bran flakes (100% bran)	2.2
Bran flakes (40% bran)	1.0
Raisin bran	0.1
Puffed wheat	0.6
Shredded wheat	0.6
Sunflower seeds (kernels)	1.1
Sesame seeds	1.8
Pumpkin seeds (kernels)	0.5
English walnuts	1.2
Peanuts with skins	1.4
Almonds with skins	1.1
Pecans	0.7
Peanut butter (2 teaspoons)	0.4
Whole-grain bread (1 slice)	0.2
Bran muffin (1 muffin)	0.4
Fresh fruit with skin (1 average)	0.8
Fresh fruit without skin	0.5
Raw vegetables	0.6

4. A number of ill effects may occur when irritant cathartics are overused. One of these effects is electrolyte imbalance. The small intestine contains an abundance of sodium, potassium, chloride and bicarbonate ions that may be lost when the bowel is emptied vigorously. This can result in:

   a. Dehydration.

   b. Acidosis.

   c. Alkalosis.

   d. Potassium deficiency.

ACTIVITY #9. Miscellaneous

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
choline	Choline Chloride
*cimetidine	Tagamet
*dexpanthenol	Ilopan

Choline is a lipotropic substance. Ilopan is a smooth-muscle relaxant. Cimetidine (Tagamet) is an H-2 antihistamine.

LEARNING ACTIVITIES - continued

Major Uses

1. Lipotropic agents decrease the fat content of the liver. They are essential for normal transport for the liver and are used in an attempt to treat disorders of hepatic fat-transport.

2. Ilopan is used prophylactically immediately after major abdominal surgery to reduce the possibility of paralytic ileus and also to treat intestinal atony causing abdominal distention, postoperative or postpartum retention of flatus, postoperative delay in resumption of intestinal motility and paralytic ileus.

3. Tagamet is used to treat pathologic hypersecretory conditions and duodenal ulcer.

Mechanism of Action

1. Lipotropic agents facilitate phospholipid turnover and enhance fat-transport from the liver to the tissues, thus decreasing the fat content of the liver.

2. Ilopan stimulates intestinal smooth muscles, restores tone to intestines.

3. Tagamet, an anticholinergic, competitively inhibits the action of histamine and thus decreases gastric acid secretion.

Side Effects

Choline

GI irritation on empty stomach

Tagamet

1. Dizziness

2. Mild diarrhea

3. Perforation of chronic peptic ulcer after abrupt cessation

4. Urticaria

Ilopan

1. Hyperperistalsis

2. Flatus

Nursing Considerations

1. Food supplying choline include:

   a. Egg yolk.

LEARNING ACTIVITIES - continued

- b. Beef.
- c. Liver.
- d. Legumes.
- e. Vegetables.
- f. Milk.

2. When Ilopan is used, it may take 72 hours before a response is seen.

ACTIVITY #10. Review Exercises

Directions: Answer the following questions. Answers can be found by rereading the material in this module and using the PDR.

1. What discharge instructions would you include for patients going home on any of the following medications?

   a. Diphenoxylate HCL - Lomotil 2.5 mg QID po p.r.n.:

   b. Probantheline bromide - Probanthine 15 mg po QID:

   c. Dimenhydrinate - Dramamine 50 mg po Q6h p.r.n.:

   d. Magaldrate - Riopan 15cc Q2h while awake:

LEARNING ACTIVITIES - continued

e. Quinacrine HCL - Atabrine - 100 mg po TID for 7 days:

f. Psyllium seed - Metamucil - 1 teaspoon QD:

2. Mrs. Kidd was admitted last evening with a diagnosis of abdominal mass of questionable etiology. During the night she started to complain of sharp intermittent RLQ abdominal pain radiating to the back that worsened with movement. At 0700, she had an emesis of 50 cc foul smelling green, frothy material. A call has been put in to her doctor, but it has not yet been returned. At 0800, she denied nausea, took 250 cc of tea and retained it. She has continued to have the intermittent pain but currently feels better. Two ounces of castor oil are ordered at 0800 as part of the prep for the BaE she is to have tomorrow. What is your assessment of the situation? How will you respond to it?

LEARNING ACTIVITIES - continued

3. Billy Jo has an NG tube due to GI bleeding. The doctor orders 30cc Mylanta II Q hour. Describe in detail how you will accomplish this.

4. Go to a drugstore or discount store and answer the following questions for each of the drugs in the chart below.

   a. Can it be bought over the counter?

   b. Under what name(s):

   c. What does the package say it treats?

DRUG	A	B	C
1. Dimenhydrinate			
2. Simethicone			
3. Pepsin			
4. Sodium bicarbonate			
5. Aluminum hydroxide			
6. Bile salts			
7. Ipecac			
8. Prochlorperazine			
9. Psyllium			
10. Methylcellulose			
11. Magnesium sulfate			
12. Phenolphthalein			
13. Bisacodyl			
14. Calcium carbonate			
15. Kaolin			

LEARNING ACTIVITIES - concluded

5. Identify the usual dosages of the following medications and the routes of administration:

	DOSAGE	ROUTE
a. Bisacodyl	________	________
b. Milk of Magnesia	________	________
c. Trimethobenzamide HCL	________	________
d. Probanthine	________	________
e. Cimetidine	________	________

ACTIVITY #11. How Calculating Are You?

Directions: Complete the following problems, showing your work, and turn in to your instructor at the beginning of the lecture on "Drugs Used in the Treatment of Gastrointestinal Diseases."

1. 0.001 X 3.5 =
2. $300\overline{)1.5}$
3. 0.3 grams = ____mg
4. Chloral Hydrate 500 mg = ___grams = ___grains
5. Maalox 2 tsp. = ____ cc = ____ʒ
6. Valium 10 mg = ____gram = ____grain
7. IV - 1000 cc to infuse in 8 hours. Drip chamber delivers 15 gtts/cc. ____cc/hr. ____gtts/min.
8. On hand - grain 1/200 in 1cc
Ordered: 1/500 grain
9. Dose ordered: grain 1/16
On hand - grain 1/32 in 1 cc
10. Dose ordered: grain 1/400
On hand - grain 1/250 in 1 cc
11. Dose ordered: 20 mg
On hand - 100 mg in 2 cc
12. Dose ordered 75 mg
On hand - 80 mg in 2 cc
13. Dose ordered: 5 mg
On hand - 1/4 grain in 1 cc

unit 19

PHARMACOLOGY

Module E, Part II - Medications Used in the Treatment of Urological Disorders

RATIONALE

In order to provide optimal nursing care you must understand how to prepare and administer medications to a patient with urological disorders. You must also understand how these medications can affect the patient.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the classification of drugs commonly used in treating urological disorders.
2. Demonstrate the method of properly reconstituting a drug.
3. Identify side effects of drugs commonly used in the treatment of urological disorders.
4. Identify nursing considerations that relate to the administration of drugs used in the treatment of urological disorders.
5. Identify major uses for selected drugs in the treatment of urological disorders.
6. Calculate and convert dosages for drug administration.
7. Demonstrate setup and administration of medications in the treatment of urological disorders when given an assignment in the clinical area.

LEARNING ACTIVITIES

Directions: All of the information needed to complete Module E and to pass the test is included in this module and the PDR (Physicians Desk Reference). Exercises have been designed to help you learn the material and focus on areas not specifically included (such as recommended dosages for individual drugs).

Since so many medications are included in this module, an effort has been made to simplify your study for the test by placing a star next to the more common drugs that may be included on the test.

You will better understand these drugs if you first complete Module 17-E, "Nursing Care for Patients with Diseases of the Urinary System."

REMEMBER: Much of the information relating to these drugs is generalized and based upon the classification of the drug. Therefore, when giving a drug, LOOK UP EACH DRUG for its specific side effects, nursing considerations, actions, uses and dosage.

Good Luck!!

LEARNING ACTIVITIES - continued

ACTIVITY #1. Water Balance Via the Kidney

Directions: Read the following.

The kidney is the principal organ of the body involved with water balance. If the output of water from the body exceeds the water intake, the body is said to be in a negative water balance. This imbalance leads to the body's dehydration. In the other extreme, a positive water balance occurs when the intake of water exceeds the output. Ordinarily, the body maintains a close balance between the water ingested and excreted.

In addition to excretion via the kidney, water may be lost by diffusion through the skin (perspiration containing a weak solution of sodium chloride). It is possible to lose 3000 ml of water through the skin in 24 hours when exercising heavily. This amount of water may represent as much as 10 grams of salt. For this reason salt intake should be augmented in warm weather to avoid a serious electrolyte imbalance.

The kidney has the ability to regulate its output according to the amount of fluid ingested and the amount lost by other routes from the body. Thus in very warm weather, the output from the kidneys is considerably less than it is in cool weather.

A great deal more fluid is filtered into the Bowman's capsule than is excreted in the urine. This is because much of the fluid is reabsorbed where the collecting tubule from the Bowman's capsule circles back through another capillary bed on its way to the renal pelvis. It is estimated that for every 125 ml of fluid filtered through the glomerulus, only 1 ml is eventually secreted.

Reabsorption of the filtered fluid is largely due to the influence of the antidiuretic hormone (ADH) from the posterior pituitary gland. Diabetes insipidus is a disease in which this hormone is missing or present in inadequate amounts. It is characterized by the excretion of copious amounts of urine, sometimes 10-12 liters a day. This condition is treated by the administration of posterior pituitary hormone.

ACTIVITY #2. Diuretics

Directions: Read the following.

Diuretics are drugs that increase the urinary excretion of water and sodium. They enhance the activity of the kidneys but do not stimulate diseased kidneys. Primarily these drugs are used in excess fluid retention or hypertension. They are usually classified according to their action and structure. The cause of a patient's edema is an important factor in determining which diuretic should be used.

Carbonic Anhydrase Inhibitors

GENERIC NAMES	TRADE NAMES
acetazolamide	Diamox
ethoxzolamide	Ethamide

LEARNING ACTIVITIES - continued

Major Uses

Treatment of:

1. Glaucoma
2. Selected cases of petit mal and grand mal epilepsy
3. Premenstrual tension

Side Effects

1. Mild acidosis
2. Drowsiness
3. Paresthesia

Nursing Considerations

1. Monitor intake and output.
2. Weigh patient daily; rapid weight loss may cause hypotension.

Thiazide Diuretics

GENERIC NAMES	TRADE NAMES
chlorothiazide	Diuril
chlorthalidone	Hygroton
cyclothiazide	Anhydron
*hydrochlorothiazide	Oretic, Hydrodiuril
polythiazide	Renese

Major Uses

Treatment of:

1. Congestive heart failure (when other diuretics are ineffective)
2. Edema due to nephrotic syndrome, drugs or pregnancy
3. Hypertension
4. Premenstrual syndrome

Side Effects

1. Hyperglycemia

LEARNING ACTIVITIES - continued

2. Electrolyte distrubances
    a. Hypokalemia (decreased potassium)
    b. Hyponatremia (decreased sodium)
3. Nausea, vomiting, diarrhea

Nursing Considerations

1. Watch for signs of muscle weakness and cramps.
2. Daily weight.
3. Accurate intake and output.

Loop Diuretics

GENERIC NAMES	TRADE NAMES
*ethacrynate sodium	Edecrin
*furosemide	Lasix

Major Uses

Treatment of:

1. Congestive heart failure.
2. Cirrhosis.
3. Pulmonary edema (when other diuretics are ineffective).

Side Effects

1. Nausea, vomiting and diarrhea
2. Hyponatremia
3. Hypokalemia
4. Hyperglycemia

Nursing Considerations

1. Give oral and I.M. doses in the a.m. to prevent nocturia.
2. Potent diuretics - especially strong.
3. Monitor blood pressure and pulse during rapid diuresis.

LEARNING ACTIVITIES - continued

4. Give IM injection by Z-track method (prevents leakage into sub. q. tissue).
5. Patients need to know they will void frequently. Those with catheters should have their drainage bags checked frequently.
6. Dietary habits may have to change. Low-sodium diets are often ordered by the physician as sodium helps retain fluids.

Osmotic Diuretics

GENERIC NAMES	TRADE NAMES
*mannitol	Osmitrol
*urea	Ureaphil

Major Uses

1. Treatment of mercurial poisoning.
2. Prevention of acute renal failure during and after prolonged surgery.
3. Treatment of anuria and oliguria due to:
    a. Shock.
    b. Hemorrhage.
    c. Dehydration.

Side Effects

1. Headache
2. Nausea and vomiting
3. Mental confusion
4. Hypotension

Potassium-Sparing Diuretics

GENERIC NAMES	TRADE NAMES
*spironolactone	Aldactone
*triamterene	Dyrenium

Major Uses

1. Hypertension.
2. Useful as an adjunct to other diuretic therapy.

LEARNING ACTIVITIES - continued

These agents alone are not potent and are frequently combined with thiazide and loop diuretics.

Side Effects

1. Dry mouth
2. Lethargy
3. Headache
4. Rash

Nursing Considerations

1. Warn patient to avoid excessive ingestion of potassium-rich foods.
2. Give with meals to enhance absorption (Aldactone).
3. Give medication after meals to prevent nausea (Dyrenium).

Discharge teaching for patients on diuretics should include:

1. The signs and symptoms of electrolyte loss (please see Chart I & II on potassium content of various foods).
2. The importance of taking the medication as prescribed. It may be ordered daily, QOD or only on certain days of the week. A calendar with the dates circled may be suggested to the patient to help them remember.
3. The importance of notifying the doctor of signs of weakness or unusual problems.

Signs and Symptoms of

HYPONATREMIA	HYPOKALEMIA
Oliguria, anuria	Muscle weakness
Decreased skin turgor	Muscle cramps
Dry mucous membranes	Cardiac arrhythmias
Hypotension	Postural hypotension
Tachycardia	Apathy, malaise
Apprehension	Anorexia
	Vomiting
	Abdominal distension and paralytic ileus
	Thirst
	Shallow respirations

LEARNING ACTIVITIES - continued

Breakfast drinks and potassium content vary from product to product. The following chart will help you with instructing your patient in the best method of obtaining potassium.

PRODUCT	POTASSIUM CONTENT (MG) RECONSTITUTED JUICE (4 oz)	(meq)
Awake, concentrate	41	1.05
Birds Eye, concentrate	232	5.93
Canned orange juice	186	4.76
Orange Plus, concentrate	254	6.50
Orange Tang (powder) (concentrate)	45	1.15
Fresh orange juice	200	5.11
Frozen concentrate	200	5.11

CHART I

LEARNING ACTIVITIES - continued

The following foods are also rich in potassium. Remember these when you have a patient who is on a diuretic.

	MILLIEQUIVALENTS OF POTASSIUM
FRUITS	
Apricots, raw 2-3 medium	7.06
Banana, 1 medium	16.12
Dates, dried, 3-4	5.78
Figs, raw, fresh, 2 large	4.86
canned in syrup, 3 figs, 2 tbsp. syrup	2.68
dried, 7 small	19.96
Oranges, 1 medium 3"	9.21
Peaches, dried, 1/2 cup, uncooked	28.16
Prunes, dried, raw 5 large	7.68
Raisins, dried, seedless, 2 tbsp.	3.68
JUICES	
Tomato, 1/2 cup, canned	7.29
Orange, 1/2 cup, fresh	5.68
MISELLANEOUS	
Br'er Rabbit syrup, 1 tbsp.	6.91
5 tbsp.	34.56
Brazil nuts, shelled, 4 medium	2.56
shelled, 1/3 cup	17.15
Instant coffee, Folgers, 2 G dry in 240 cc water	6.14

CHART II

LEARNING ACTIVITIES - continued

ACTIVITY #3. Antihypertensives

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
alseroxylon	Rauwiloid, etc.
*clonidine hydrochloride	Catapres
guanethidine sulfate	Ismelin
*hydralazine hydrochloride	Apresoline, etc.
*methyldopa	Aldomet, etc.
*metoprolol	Lopressor, etc.
*nitroprusside sodium	Nipride
propranolol hydrochloride	Inderal
*rauwolfia serpentina	Raudixin, etc.
*reserpine	Serpasil, etc.

An estimated 15% of the adult population is hypertensive. Only about one-half of these people realize they are ill because they remain asymptomatic until complications such as stroke, heart disease or renal disease occur. Arterial hypertension is characterized by increased peripheral vascular resistance resulting in a consistent elevation of the diastolic pressure above the accepted range of normal (about 90 mm Hg) and pathologic changes in the retinal arterioles. When there is no known cause for the elevated blood pressure (such as pre-existing kidney disease or atherosclerosis) the condition is termed primary hypertension. For this type of hypertension, drug therapy is the only possible means for adequate control.

Major Uses

1. Antihypertensive drugs are used primarily to treat mild to severe essential hypertension. Most parenteral drugs of this type are reserved for the treatment of hypertensive emergencies such as:
    a. Hypertensive encephalopathy.
    b. Malignant hypertension.

Side Effects

1. Postural hypotension
2. Nausea, vomiting, diarrhea
3. Dry mouth

Nursing Considerations

1. While taking these drugs, the patient's blood pressure and pulse rate should be monitored frequently.
2. Warn the patient that these drugs may cause drowsiness and for this reason, they should not drive or engage in hazardous activities until the body's response to the drug has been determined.

LEARNING ACTIVITIES - continued

3. Inform the patient that orthostatic hypotension can be minimized by rising slowly and avoiding sudden position changes.

4. Mouth dryness, produced by many of these drugs, may be relieved with chewing gum or sucking hard sour candy or ice chips.

5. Teach patients everything about the disease process and therapy. Explain why it is important to take the drug exactly as prescribed, even when they are feeling well. Advise patients to avoid alcohol and to stay on the diet prescribed by the doctor.

6. Always check the patient's apical pulse rate before giving the drug Lopressor. If it is less than 60 beats per minute, hold the drug and call the doctor.

ACTIVITY #4. Review Exercise

Directions: Complete the following questions. Answers can be found by reviewing the material in this module.

1. Diuretics are drugs that ______________________________ ______ the urinary excretion of water and ______________________________ ______________.

2. Diuretics are classified according to their ______________________________ __________ and ____.

3. You give oral and I.M. doses of diuretics to prevent ____________________.

4. It is estimated that __________% of the adult population is hypertensive.

5. Antihypertensive drugs are used primarily to treat ____________________ ____________ and to ______________________________________ ____________ essential hypertension.

6. When ____ the antihypertensive drugs is given, always check the patient's __________ ____. If less than ______________ per minute, hold the drug and call the doctor.

ACTIVITY #5. How Calculating Are You?

Directions: Complete the following problems showing your work and turn in to your instructor at the beginning of the lecture "Drugs Used in the Treatment of Urinary Disorders."

1. 0.065 X 500 =

2. $7\overline{)0.64}$

3. 10 grain = _____mg

LEARNING ACTIVITIES - concluded

4. 1/3 grain = _____mg

5. Lasix 40 mg = ____ gram = _____grain

6. Edecrin 200 mg = _____gram = _____grain

7. Lopressor 50 mg = _____gram = _____grain

8. IV 1000 cc to run in 12 hours. Drip chamber delive
_____gtts/min.

9. On hand 50 mg in 1 cc
Ordered: 35 mg

10. Dose ordered gr 1/64
On hand gr 1/32 in 1 cc

11. Dose ordered 75 mgm
On hand 100 mgm in 2 cc

12. Dose ordered 1/6 gr
On hand 1/2 gr in 1 cc

in

grain

_grain

chamber delivers 15 gtts per cc _____cc/hr.

PHARMACOLOGY

Module F, Part II - Medications Used in the Treatment of Disorders Involving the Endocrine System

RATIONALE

In order to provide optimal nursing care you must understand how to prepare and administer medications to a patient with a disorder related to the endocrine system and you must understand how these medications can affect that patient.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the classifications of drugs commonly used in the treatment of endocrine system disorders.
2. Identify side effects of drugs commonly used in the treatment of endocrine system disorders.
3. Identify nursing considerations that relate to the administration of drugs used in the treatment of endocrine system.
4. Identify major uses for selected drugs in the treatment of endocrine system disorders.
5. Calculate and convert dosages for drug administration.
6. Demonstrate setup and administration of medications in the treatment of endocrine system when given an assignment in the clinical area.

LEARNING ACTIVITIES

Directions: All of the information needed to complete Module F and to pass the test is included in this module and the PDR (Physician's Desk Reference). Exercises have been designed to help you learn the material and focus on areas not specifically included (such as recommended dosages for individual drugs).

Since so many medications are included in this module, an effort has been made to simplify your study for the test by placing a star next to the more common drugs that may be included on the test.

You will better understand these drugs by first completing Module 17-F, "Nursing Care for Patients with Diseases of the Endocrine System."

Remember: Much of the information relating to these drugs is generalized and based upon the classification of the drug. Therefore, when giving a drug, LOOK UP EACH DRUG for its specific side effects, nursing considerations, actions used and dosages.

LEARNING ACTIVITIES - continued

ACTIVITY #1. Antidiabetic Agents

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
acetohexamide	Dymelor
chlorpropamide	Diabinese
glucagon	
insulins	(see list of Insulins)
phenformin	D.B.I.
tolazamide	Tolinase
tolbutamide	Orinase

The pancreas is an endocrine and exocrine gland that contains the islands of Langerhans. Two hormones secreted from these cells play an important role in the therapy of persons with diabetes mellitus. These are insulin and glucagon.

Glucagon is a product of the alpha cells of the islands of Langerhans; insulin is produced by the beta cells. Glucagon is effective in the treatment of hypoglycemic reactions in those who are receiving insulin. Insulin controls carbohydrate metabolism, Dymelor, Diabinese, Tolinase and Orinase (oral hypoglycemic agents) stimulate the pancreas to produce insulin. D.B.I. neither supplies insulin nor stimulates production of insulin, but it does lower blood sugar in diabetes mellitus.

Major Uses

1. Glucagon is used in the emergency treatment of insulin-induced hypoglycemia.
2. Insulin is used as a complete or partial supplementation of endogenous insulin in the treatment of diabetes mellitus (both juvenile diabetes and maturity onset diabetes when inadequately controlled by diet).
3. Insulin is used in the treatment of diabetic coma and acidosis.
4. Insulin has been used in some hospitals for the purpose of producing hypoglycemic shock on the patient with schizophrenia.
5. The oral hypoglycemic agents are used in relatively mild diabetes in which the pancreas still has some function.
6. D.B.I. is used in combination with insulin or the oral hyperglycemic agents in the treatment of stable adult diabetes mellitus and unstable adult and juvenile onset diabetes.

Mechanism of Action

1. Insulin works by increasing glucose transport across muscle and fat cell membranes to decrease blood sugar. It also promotes conversion of glucose to its storage form, glycogen.

LEARNING ACTIVITIES - continued

2. The oral hypoglycemic agents stimulate the secretion of insulin from the beta cells of the pancreas. They are of no use if the body does not produce insulin.

3. Glucagon acts primarily by mobilizing hepatic glycogen, which produces an elevation of the concentration of glucose in the body.

Side Effects

Glucagon

1. Nausea and vomiting

2. Hypersensitivity

3. Hypotension

Insulin and Oral Hypoglycemic Agents

1. Local skin reaction with repeated injection

2. Hypersensitivity

3. Hypoglycemia (insulin reaction)

4. Ketoacidosis

Summary of Differences Between Insulin Reaction and Diabetic Ketoacidosis

	Hypoglycemia Insulin Reaction	Diabetic Coma Ketoacidosis
Onset	Rapid	Slow days or weeks
Precipitating Factors		
Food	Insufficent	Excessive
Complications	None	Infection
Insulin	Excess	Too little
Exercise	Increased	Too little
Symptoms		
Thirst	Absent	Increased
Vomiting	Absent	Frequent
Hunger	Frequent	Absent
Abdominal pain	Absent	Frequent
Vision	Double	Dim
Sign		
Temperature	Normal or below	Elevated
Respirations	Normal	Hyperpnea (Kussmaul breathing acetone odor to breath

LEARNING ACTIVITIES - continued

	Hypoglycemia Insulin Reaction	Diabetic Coma Ketoacidosis
Blood pressure	Normal or elevated	Lowered, may be in shock
Skin	Moist and pale	Hot, dry and flushed
Dehydration	None	Loss of skin turgor, sunken eyeballs
Tremors	Frequent	Absent
Laboratory Findings		
Urine		
Glycosuria	May be positive but negative in second specimen	4+
Ketonuria	Negative	4+
Blood		
Sugar	Below normal	Elevated, usually above 200 mg/100 ml
Ketones	Normal	Elevated, usually 4+
Electrolytes	Normal	Decreased, except serum potassium

Nursing Considerations

1. Tabulation of commercially available insulins.

Drug	Onset	Peak	Duration	Time hypoglycemia most likely to occur
Rapid-Acting Insulins				
Regular	1/2 to 1 hr	2 to 3 hrs	5 to 7 hrs	10 a.m. to lunch
Prompt Insulin Zinc Suspension (Semilente)	1/2 to 1 hr	4 to 7 hrs	12 to 16 hrs	before lunch
Intermediate-Acting Insulins				
Globin Zinc Insulin	2 hrs	8 to 16 hrs	18 to 24 hrs	3 p.m. to dinner
Isophene Insulin Suspension (NPH)	1 to 2 hrs	8 to 12 hrs	24 to 28 hrs	3 p.m. to diner
Insulin Zinc Suspension (lente)	1 to 2 hrs	8 to 12 hrs	24 to 28 hrs	3 p.m. to dinner

LEARNING ACTIVITIES - continued

Drug	Onset	Peak	Duration	Time hypoglycemia most likely to occur
Long-Acting Insulins				
Protamine Zinc Insulin Suspension (PZI)	4 to 8 hrs	14 to 20 hrs	over 36 hrs	2 a.m. to breakfast
Extended Insulin Zinc Suspension (Ultralente)	4 to 8 hrs	16 to 18 hrs	over 36 hrs	during night; early morning hrs

2. Preparations are ordered and prepared by units. U 40 and U 80 insulin are being replaced by U 100 insulin (100 units/cc). The correct syringe must be used with the correct insulin. For example, U 100 insulin requires a U 100 insulin syringe, U 40 insulin requires a U 40 insulin syringe, etc.

   If the syringe is a different unit from the insulin, for example a U 40 syringe and a U 100 insulin, and you must give 20 units, then use the following formula:

$$\frac{\text{SYRINGE}}{\text{INSULIN}} \times \text{Dose ordered} = \text{AMOUNT MEASURED IN SYRINGE}$$

$$\frac{40}{100} \times 20 = \text{8 units measured in syringe}$$

3. Insulins must be kept cool and out of direct sunlight. They must never be frozen but may be kept cool at room temperature.

4. Insulin may be given on a "sliding scale:"

   a. When the diabetic is newly diagnosed.

   b. When diabetes is out of control.

   c. When the patient is receiving hyperalimentation.

   d. When a diabetic's insulin needs have changed due to:

      (1) Infection.

      (2) Surgery, etc.

   This method of giving insulin is used to determine the amount of insulin required on a daily basis and to bring the diabetes under control.

   The type of insulin used is regular or semilente so that a rapid onset of actiion and peak are achieved. The dose is regulated by fractional urines accurately done or blood sugars. The sliding scale insulin may be ordered QID, AC & HS or Q6hrs.

LEARNING ACTIVITIES - continued

The doctor determines if the patient is to have a moderate or long-acting insulin in addition to being on a sliding scale or if the patient will only be on sliding scale. The doctor also will determine what the sliding scale will be. The following is an example of an order for sliding scale insulin and also a daily order for a moderate-acting insulin.

Sliding Scale Insulin - Reg. U 100 QID AC and HS 0730 - 1130 - 1630 - 2100

for clinitest of 4+ give 15 units
for clinitest of 3+ give 10 units
for clinitest of 2+ give 5 units
for clinitest of 1+ give 0 units

NP insulin U 100 35 units daily 0730

At 0730 the C/A is 4+. To correctly administer the above order, you must draw up 15 units of regular insulin and 35 units of NPH insulin. You would not disregard the order for the daily insulin because you are going to give sliding scale insulin.

5. Administration of insulin

    a. Administration route is subcutaneous because absorption rate and pain is less than with IM injections (only regular insulin may be given IV).

    b. Suspension type insulins will show a settling of particles on standing. To mix swirl vial gently or rotate between palms. Do Not Shake.

    c. The measurement must be accurate. Patients are very sensitive to even minute dose changes.

    d. Sites must be rotated with each injection to prevent dimpling and thickening or abscess formation. Encourage the patient to keep a daily record. Areas that may be used include:

        (1) Anterior and lateral thighs

        (2) Deltoids

        (3) Abdomen

        (4) Buttocks

        A 1/2 inch space should be left between injections.

    e. Press, do not rub site after injection.

    f. If you must administer a combination of a short-acting insulin and a moderate or long-acting insulin, use the following procedure:

        (1) Clean the top of both vials with alcohol.

        (2) Draw air into the syringe in an amount equal to the prescribed dose of the moderate or long-acting insulin.

LEARNING ACTIVITIES - continued

(3) Inject the air into the vial, then remove the syringe from the vial.

(4) Now draw air into the syringe in an amount equal to the short-acting insulin and inject it into the vial.

(5) Invert the vial and withdraw the prescribed dose of the short-acting insulin.

(6) Before removing the syringe, make certain there are no air bubbles and that you have the prescribed dosage.

(7) Withdraw the needle and insert it into the moderate or longer-acting insulin.

(8) Withdraw the correct amount of moderate or longer-acting insulin being careful not to get any of the short-acting insulin into the moderate or longer-acting insulin vial.

g. Insulin injection sites (see Diagram I).

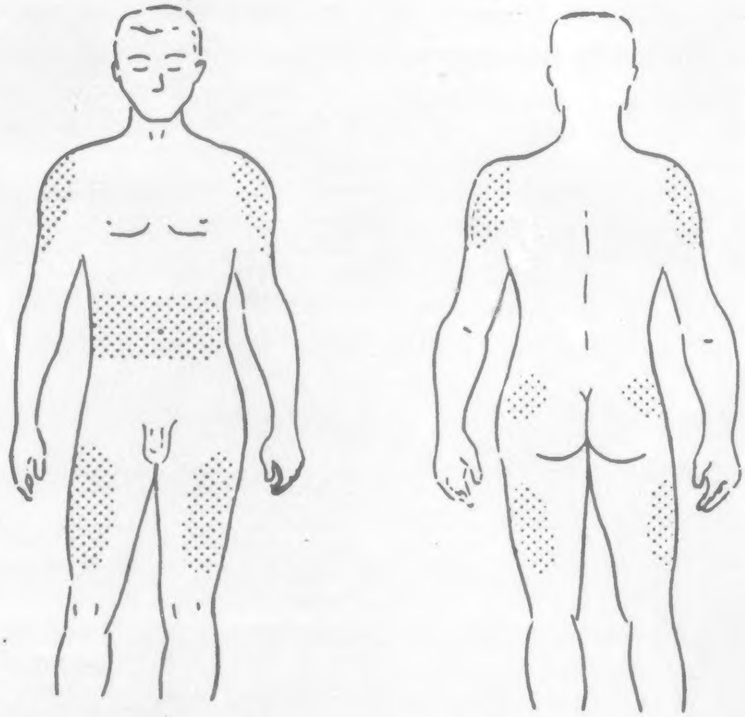


Diagram I

Shaded Areas May Be Used For Insulin Injections

LEARNING ACTIVITIES - continued

ACTIVITY #2. Vitamins

Directions: Read the following.

Water-soluble Vitamins

B_1 - Thiamine

B_2 - Riboflavin

B_3 - Niacin

B_6 - Pyridoxine

B_{12} - Cobalamin

Pantothenic acid

C - Ascorbic acid

Folic Acid

Fat-soluble Vitamins

A

D

E

K

Vitamins are essential for maintenance of normal metabolic function, growth and health. Vitamin means "vital for life." Most vitamins must be produced from sources outside the body. However, the body produces two vitamins.

1. Vitamin D (produced by exposure of the skin to sunlight)
2. Vitamin K (produced by the intestinal bacteria)

Only small amounts of vitamins are necessary for growth and health and an adequate and varied diet will provide all vitamins needed except during infancy and pregnancy. Vitamin deficiency may be the result of:

1. Disorders of the GI tract interfering with absorption.
2. Alcoholism.
3. Poverty.
4. Cultural or idiosyncratic beliefs. In these cases, vitamin preparations are therapeutic.

LEARNING ACTIVITIES - continued

Vitamins are classified as fat-soluble or water-soluble. Fat-soluble vitamins are stored by the liver and fatty tissue in large amounts. A deficiency in these vitamins occurs only after long deprivation, therefore, hypervitaminosis may occur more easily with these. Water-soluble vitamins are not stored in the body in large amounts and short periods of an inadequate intake can lead to deficiency.

Major Uses

1. Vitamins are used to prevent or treat selective or multiple vitamin deficiencies and for other therapeutic purposes.
2. Study the following tables concerning vitamins.

TABLE I

	Source	Specific Function	US RDA	Deficiency	Vitamin and Therapeutic Source
VITAMIN A	Dairy products, carrots, green vegetables, liver, kidney, eggs.	Visual pigments. Maintenance of epithelial tissue.	4 yrs & up 5000 I U Under 4 yrs 2500 I U	Nightblindness. Corneal softening. Hyperkeratosis.	Vitamin A, USP halibut liver oil, cod liver oil. Water miscible vit. A (Aquasol A)
VITAMIN D	Egg yolk, butter, milk, fish, liver, oil, shrimp, salmon.	Absorption of calcium from intestine. Deposition of mineral in bone.	400 I U	Rickets in children. Osteomalacia in adults.	Cod liver oil, halibut liver oil, calciferol tablets, sunlight, Cholecalciferol, USP
VITAMIN E	Wheat germ, egg yolk, liver, vegetable oil.	Essential for normal hematopoiesis.	4 yrs & up 30 I U Under 4 yrs 10 I U	Hemolytic anemia	Multivitamins, tocopherol capsules and tablets
VITAMIN K	Leafy green vegetables, egg yolk, soy bean oil, liver.	Vital to blood clotting.	Not established.	Prolonged blood coagulation time and increase incidence of hemorrhage (deficiency rarely occurs).	Menadione Aquamephyton Chlorophyll complex Phytonadione

TABLE II

	Source	Specific Function	US RDA	Deficiency	Vitamin and Therapeutic Source
VITAMIN B_1	Cereal grains, yeast, meat, peas, beans.	Carbohydrate metabolism.	4 yrs & up 1.5 milligrams Under 4 yrs 0.7 milligrams	Central and autonomic nervous system disturbances Fatigue Neuritis Beriberi	Thiamine Hydrochloride or injection Multivitamins Dried yeast, USP
VITAMIN B_2	Yeast, meat, green leafy vegetables.	Coenzymes for metabolism of respiratory proteins.	4 yrs & up 1.7 milligrams Under 4 yrs 0.8 milligrams	Glossitis Dermatitis Stomatitis	Riboflavin tablets and injections Decavitamins
VITAMIN B_3	Yeast, lean meat, liver.	Converts food to energy. Aids nervous system.	4 yrs & up 20 milligrams Under 4 yrs 9 milligrams	Pellagra	Niacin, NF Nicotinic acid Niacin injection B complex vitamins Niacinamide, USP
VITAMIN B_6	Yeast, cereal grains, egg yolk, liver, nuts, peas, potatoes, meat, fish.	Necessary for synthesis of protein and important for RBC's nervous system.	4 yrs & up 2.0 milligrams Under 4 yrs 0.7 milligrams	Convulsions Hyperirritability Neuritis Edema Anemia	Pyridoxine tablets Decavitamins

TABLE III

	Source	Specific Function	US RDA	Deficiency	Vitamin and Therapeutic Source
VITAMIN B_{12}	Liver, kidney, fish, egg yolk.	Necessary for proper function of cell of bone, nervous system, GI tract, prevent certain forms of anemia.	4 yrs & up 6 micrograms Under 4 yrs 3 micrograms	Pernicious anemia (usually found in strict vegetarians)	Variety of B_{12} preparations
VITAMIN C	Fruits, fresh green vegetables, corn, tomatoes, rose hips.	Oxidation-reducation processes. Maintenance of normal connective tissue. Adrenal-cortical function.	4 yrs & up 60 milligrams Under 4 yrs 40 milligrams	Scurvy Swelling, redness and bleeding of gums. Petechiae Capillary fragility Anemia	Ascorbic acid tablets and injection. Decavitamins
Pantothenic Acid	Liver, eggs, wheat germs, cheese.	Contributes to metabolism of carbohydrates, fat and protein; important for synthesis of essential body fats.	4 yrs & up 10 milligrams Under 4 yrs 5 milligrams	Neurologic disturbances Irritability Fatigue Muscle cramps Dry, scaly skin Adrenal hypofunction	Decavitamins

TABLE III - continued

	Source	Specific Function	US RDA	Deficiency	Vitamin and Therapeutic Source
Folic Acid	Leafy green vegetables, nuts, legumes, liver, kidney, asparagus, whole grains.	Works with vitamin B_{12} in the production of red blood cells; aids metabolism development of nerve cells; maintains nervous system intestinal tract, white blood cells.	4 yrs & up 400 micrograms Under 4 yrs 200 micrograms	Certain anemias	Folvite Sodium folate

LEARNING ACTIVITIES - continued

Nursing Considerations

1. Vitamins may lose as much as one-third of their potency in one month and 80% of their potency in six months. Vitamins without expiration dates should only be purchased at stores with high sales volume if possible. Patients should be instructed not to purchase a large amount of vitamin preparations at one time and to discard old vitamin preparations.

2. Units of measure

   a. 1 gram = 1000 milligram

   b. 1 milligram - 1000 microgram

   c. I U - international units

ACTIVITY #3. Corticosteroids

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
beclomethasone dipropionate	Vanceril
*betamethasone	Celestone
*cortisone acetate	Cortone Acetate
*dexamethasone	Decadron
fludrocortisone acetate	Florinef
*hydrocortisone	Cortef, Solucortef
methylprednisolone	Medrol
paramethasone acetate	Haldrone
*prednisolone	Deltacortef
*prednisone	Deltasone
*triamcinolone	Aristocort

The adrenal glands are located just above the kidneys and consist of two parts, the medulla and the cortex. Removal of the adrenal glands will result in death unless injections of adrenocortical hormones are given. Corticosteroids are secreted by the adrenal cortex and may be divided into three categories:

1. Glucocorticoids - responsible for stopping inflammation

2. Mineralcorticoids - affecting electrolyte and water metabolism

3. Small amounts of sex hormones

Today corticosteroids are available for therapeutic usages as naturally occurring hormones and as synthetic products.

LEARNING ACTIVITIES - continued

Major Uses

1. Treatment of adrenal insufficiency.
2. Relief of inflammation in:
    a. Rheumatic fever
    b. Rheumatoid arthritis
    c. Collagen diseases
        (1) Lupus
        (2) Erythematosus
        (3) Dermatomyositis
        (4) Periarteritis
        (5) Nodosa
    d. Nephrotic syndrome

    The progression of these diseases is not affected.
3. Supression of the inflammatory reaction in:
    a. Food allergies.
    b. Drug allergies.
    c. Asthma.
    d. Ulcerative colitis.
    e. Vasculitis.
    f. Allergic dematoses.
4. Emergency treatment of shock and vasculitis.
5. Immunosuppression and anti-inflammation effect in organ and tissue transplant, preventing rejection.
6. Adjunctive treatment of:
    a. Leukemias.
    b. Lymphomas.
    c. Myelomas.

LEARNING ACTIVITIES - continued

7. Treatment of hypercalcemia resulting from:
    a. Breast cancer.
    b. Multiple myeloma.
    c. Sarcoidosis.
    d. Vitamin D intoxification.
8. Relief of cerebral edema after neurosurgery or associated with brain tumors.

Side Effects

1. Fluid and electolyte disturbances
    a. Sodium retention
    b. Potassium loss
    c. Edema
    d. Hypertension
    e. Weight gain
2. GI:
    a. Abdominal distention
    b. Peptic ulcer
3. Skin:
    a. Petechiae
    b. Ecchymosis
    c. Increased sweating
4. Musculoskeletal
    a. Weakness
    b. Loss of muscle mass
    c. Compression fractures

LEARNING ACTIVITIES - continued

5. Neurological
    a. Vertigo
    b. Headache
    c. Convulsions
    d. Increased intracranial pressure
    e. Mental changes from depression to euphoria
6. Endocrine
    a. Menstrual irregularities
    b. Suppression of growth in children
    c. Induced diabetes mellitus
7. Eyes
    a. Cataracts
    b. Glaucoma
8. Poor resistance to infections
    a. Poor wound healing
9. Cushingoid symptoms
    a. Peculiar type of obesity in which fat is distributed in pads between the shoulders and around the waist. (See Diagram I)

LEARNING ACTIVITIES - continued

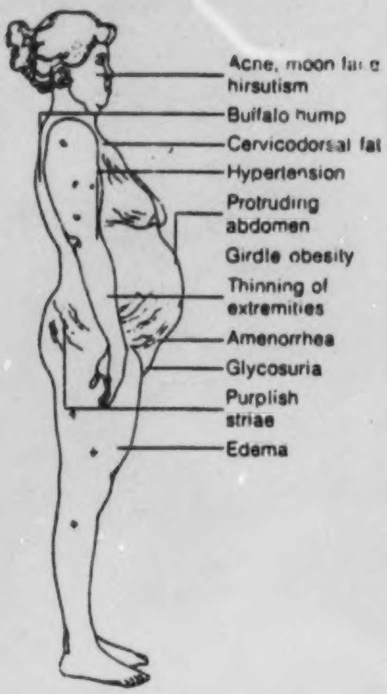

Acne, moon face
hirsutism
Buffalo hump
Cervicodorsal fat
Hypertension
Protruding
abdomen
Girdle obesity
Thinning of
extremities
Amenorrhea
Glycosuria
Purplish
striae
Edema

Diagram I

Nursing Considerations

1. Prolonged therapy may cause adrenal insufficiency.
    a. To minimize adrenal insufficiency and insomnia, give two-thirds of the daily dose before 10 a.m. and one-third in the early afternoon.

    b. Alternating days of therapy may reduce adverse reaction in long-term treatment.

    c. AT NO time is long-term corticosteroid therapy abruptly discontinued. Adrenal insufficiency and adrenal crisis may be precipitated, in some cases leading to death. Short-term therapy (less than 7 days) with moderate doses (40 mg or less of predisone or equivalent) produces few side effects and may be abruptly discontinued.

2. Infections and poor wound healing may be a problem during drug therapy. Watch closely for:
    a. Wound infections.

    b. Poor healing.

LEARNING ACTIVITIES - continued

c. Wound separation.

d. Evisceration.

3. Discharge teaching should include:

a. Doses are not to be omitted.

b. Report any occurrence of illness or infection immediately.

c. Patient on long-term therapy should be encouraged to wear a medical alert tag.

d. Teach patient signs of early adrenal insufficiency.

(1) Fatigue

(2) Muscular weakness

(3) Joint pain

(4) Fever

(5) Anorexia

(6) Nausea

(7) Dyspnea

(8) Dizziness

(9) Fainting

4. Unless contraindicated, give PO dose with food or antacid.

ACTIVITY #4. Thyroid Hormones

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*levothyroxine sodium (T-4)	Letter, Synthroid
liothyronine sodium (T-3)	Cytomel
*liotrix	Euthroid, Thyrolar
thyroglobulin	Proloid
thyrotropin	Thyrotron

The thryoid gland is one of the most richly vascularized tissues of the body. It is the largest of the endocrine glands and is known to produce three hormones.

LEARNING ACTIVITIES - continued

1. Thyroxine (T-4)
2. Triiodothyronine (T-3)

   These act as catalysts in stimulating specific cells that affect:

   a. Energy level.
   b. Skeletal growth.
   c. Texture of the skin.
   d. Luster of the hair, etc.

3. Thyrocalcitonin

   This hormone helps to regulate calcium metabolism. The thyroid gland also serves as a storehouse for iodine. (Iodine is essential for the thyroid hormone synthesis.)

   Excessive thyroid activity (hyperthyroidism) increases metabolism causing:

   a. Nervousness.
   b. Palpitations.
   c. Restlessness.
   d. Insomnia.

   Deficient thyroid activity (hypothyroidism) produces:

   a. Drowsiness.
   b. Lethargy.
   c. Fatigue.

Major Uses

1. Replacement therapy in treatment of:
   a. Primary and secondary myxedema.
   b. Myxedema coma.
   c. Cretinism.
   d. Simple nontoxic goiter.
2. Treatment of confirmed hypothyroidism.

LEARNING ACTIVITIES - continued

3. Treatment of autonomous thyroid and chronic thyroiditis.
4. Problems of sterility and habitual abortion resulting from hypothyroidism have been successfully treated.

Side Effects

1. Nervousness
2. Insomnia
3. Tachycardia
4. Palpitations
5. Arrhythmias
6. Diarrhea

Nursing Considerations

1. Suggest that the patient take thyroid hormones at the same time each day to maintain constant hormone levels. Taking dose in a.m. prevents insomnia.
2. Be aware of signs and symptoms of hyperthyroid crisis.
    a. Hyperpyrexia (temp. 100° F - 106° F)
    b. Unusually rapid speech
    c. Palpable goiter
    d. Increased blood pressure with wide pulse pressure
    e. Cardiac arrhythmia
        (1) Sinus tachycardia
        (2) Atrial fibrillation
    f. Nausea, vomiting, diarrhea
    g. Nervousness, trauma, agitation

LEARNING ACTIVITIES - continued

ACTIVITY #5. Thyroid Hormone Antagonists

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
iodine	
radioactive iodine 131_{I}	
methimazole	Tapazole
methylthiouracil	Methiocil
propylthiouracil	Propacil

An antithyroid drug is a chemical agent that lowers the basal metabolic rate by interfering with the release, formation or action of the hormones made by the thyroid gland.

Major Uses

1. Treatment of:
    a. Hyperthyroidism in Graves' disease.
    b. Multinodular goiter.
    c. Thyroiditis.
2. To prepare patients:
    a. For surgery.
    b. To treat thyrotoxic crisis.
3. Iodine is used to treat potentially fatal thyrotoxic crisis (hyperthyroid crisis) in adults and neonates and preoperatively to decrease vascularity of the thyroid gland.
4. Radioactive iodine is used when surgery is contraindicated in hyperthyroidism and cancer.

Side Effects

Vary according to drug. With thionamides you may see:

1. Blood dyscrasias
    a. Leukopenia
    b. Agranulocytosis

LEARNING ACTIVITIES - continued

2. Diarrhea
3. Nausea
4. Vomiting
5. Urticaria
6. Headache
7. Vertigo

Nursing Considerations

1. When using radioactive iodine ^{131}I
   a. After the dose for hyperthyroidism, encourage the patient to:
      (1) Use good toilet habits.
      (2) Avoid coughing or expectorating for 24 hrs as urine and saliva will be slightly radioactive for this period of time.
   b. After receiving a dose for thyroid cancer, the patient's saliva and urine remain radioactive for 3 days. Suggested radioactive precautions include:
      (1) Pregnant personnel should not care for patient.
      (2) Patient should be isolated.
      (3) Eating utensils and linens should be disposable.
      (4) Encourage good toilet habits; urine may be flushed.
      (5) Contact with patient should be limited to 30 minutes per person per shift first day; one hr the second day and longer on the third day.
2. With other drugs
   a. Eating iodized salt and shellfish during treatment should be discussed with doctor.
   b. Patient teaching should include warning about OTC cough medications that may contain iodine.

LEARNING ACTIVITIES - continued

ACTIVITY #6. Pituitary Hormones

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*corticotropin	ACTH, Acthar
oxytocin	Pitocin, Syntocinon
somatotropin	Atsellacrin
vasopressin	Pitressin
vasopressin tannate	Pitressin Tannate

The pituitary gland is about the size of a pea and occupies a space in the sella turcica of the sphenoid bone. It consists of an anterior and posterior lobe, plus a smaller pars intermedia. The number of hormones secreted by this gland is not known. Present information indicates the following hormones are secreted by the anterior pituitary.

1. The growth hormone or somatotropic hormone (which currently has no established place in medicine).
2. The follicle-stimulating hormone (not yet obtained in highly purified form).
3. Luteinizing hormone.
4. Thyrotropic hormone.
5. A lactinogenic factor (prolactin or mammotropin).
6. The adrenocorticotropic hormone.
7. Melanocyte - stimulating hormone.

Although the hormones produced by the anterior pituitary are important physiologically, until recently their usefulness has been limited because of expense, limited quantity and lack of purified preparations.

Two major hormones have been identified from the posterior lobe of the pituitary:

1. Oxytocin (which stimulates contraction of the uterine muscle).
2. Vasopressin (responsible for the absorption of water in the renal tubings, causing an antidiuretic effect and a pressor effect).

Major Uses

1. As a diagnostic agent in determining the source of adrenocortical insufficiency (ACTH, Acthar).
2. Treatment of growth impairment due to growth hormone deficiency (Atsellacrim).

LEARNING ACTIVITIES - continued

3. Treatment of symptoms of diabetes insipidis (Pitressin, desmopressin).
4. Oxytocin is used to control postpartum hemorrhage and to induce labor.

Side Effects

Vary from drug to drug. May include:

1. Hypersensitivity.
2. Headache.
3. Dizziness.
4. Nausea.

Nursing Considerations

1. With the administration of ACTH, follow the same considerations as you would for other corticosteroids (same side effects, GI distress, gradually decrease dosage, etc.)
2. With oxytocin
    a. Monitor and record uterine contractions.
    b. Heart rate.
    c. Blood pressure.
    d. Intrauterine pressure.
    e. Fetal heart rate and character and volume of blood loss.

    If contractions occur at less than 2 minute intervals and if monitor records contractions above 50 mm Hg or if contractions last 90 seconds or longer, stop infusion, turn patient on side and call doctor.

ACTIVITY #7. Parathyroid Hormones

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*calcitonin	Calcimar
*parathyroid hormone	Parathormone

Major Uses:

1. Management of hypocalcemia in renal failure.
2. Treatment of Paget's disease of the bone (osteitis deformans).

LEARNING ACTIVITIES - continued

3. Reduction of plasma phosphate and increase of plasma calcium in hypoparathyroidism.

4. Reduction of serum calcium in acute calcemia.

Side Effects

Vary from drug to drug, but may include:

1. Nausea.

2. Vomiting.

3. Bone pain.

Nursing Considerations

1. Epinephrine should be available for use with Calcimar and parathyroid hormone (Parathormone) as systemic allergic reactions may occur.

ACTIVITY #8. Review Exercises

__Directions:__ Answer the following questions. Answers can be found by reviewing the material in this module.

1. Mr. Gtsodes has a daily order for insulin U 100 35 units each a.m. He is scheduled for a cardiac cath at 0930 this a.m. and has been NPO since midnight. How will you respond to this situation?

   ____

   ____

   ____

2. Insulin and other antidiabetic agents are used in the treatment of:

   a. Diabetes insipidis
   b. Diabetes mellitus

3. Name three drugs used in the treatment of diabetes that simulate the secretion of insulin.

   a. ______________________________

   b. ______________________________

   c. ______________________________

LEARNING ACTIVITIES - continued

4. Without looking at the chart on page 2, list the rapid-acting, intermediate-acting and long-acting insulins.

Rapid-Acting	Intermediate-Acting	Long-Acting

5. You are walking down the street when a young man, approximately 25 years old, falls apparently unconscious at your feet. Upon examination, you find he's wearing a diabetic medic alert bracelet. You also notice his skin is hot, dry and flushed and that his respirations are rapid. His breath contains a fruity odor similar to that of Juicy Fruit gum. What would you suspect this young man's problem to be?

6. How does exercise and infection affect the diabetic who has been regulated on a certain amount of insulin?

7. You have an order for regular insulin U 100 10 units stat and only have a U 40 syringe. How many units will you give in this syringe?

8. What discharge teaching would you do on a newly diagnosed diabetic patient?

LEARNING ACTIVITIES - continued

9. Which two vitamins are produced by the body?

____

____

10. Name a common food source for each of the following vitamins:

    a. Vitamin A ______________________
    b. Vitamin B-1 (thiamine) ______________________
    c. Vitamin B-6 (pyridoxine) ______________________
    d. Vitamin D ______________________
    e. Vitamin K ______________________
    f. Vitamin C ______________________

11. Name at least 10 side effects a patient on a corticosteroid such as prednisone may experience.

______________ ______________

______________ ______________

______________ ______________

______________ ______________

______________ ______________

12. What discharge instructions would you give to a patient going home on Decadron 4 mg BID?

____

____

____

ACTIVITY #9. How Calculating Are You?

Directions: Complete the following problems, showing your work, and turn them in to your instructor at the beginning of the lecture "Drugs Used in the Treatment of Endocrine Diseases."

1. 2.02 X 0.5 =

2. $29\overline{)0.174}$

3. 1 grain = _____mg

4. Quaalude 300 mg = _____grams

5. KCL ʒi = _____cc = _____tsp.

LEARNING ACTIVITIES - concluded

6. Atropine grain 1/200 = _____mg = _____grams

7. Esidrix 50 mg = _____gram = _____grain

8. IV - 1000 cc to infuse in over 6 hours. Drip chamber delivers 10 gtts/cc. _____cc/hr _____gtts/min.

9. On hand - 10 mg in 2 cc
Ordered: 7.5 mg

10. Dose ordered: grain 1/40
On hand - grain 1/32 in 1 cc

11. Dose ordered: 32 mg
On hand - 130 mg in 1 cc

12. Dose ordered: 50 mg
On hand - 100 mg in 1 cc

13. Dose ordered: 20 mg
On hand - 25 mg in 0.5 cc

14. Dose ordered: 0.2 mg
On hand - 0.32 mg in 1 cc

PHARMACOLOGY

Module G, Part II - Medications Used to Treat Reproductive Disorders and to Facilitate or Discourage Reproduction

RATIONALE

In order to provide optimal nursing care you must understand how to prepare and administer medications to a patient with reproductive disorders and you must understand how these medications can affect that patient.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the classification of drugs commonly used in the treatment of reproductive disorders.
2. Identify side effects of drugs commonly used in the treatment of reproductive disorders.
3. Identify nursing considerations that relate to the administration of medications used in the treatment of reproductive disorders.
4. Identify major uses for selective drugs used in the treatment of reproductive disorders.
5. Calculate and convert dosages for drug administration.
6. Demonstrate setup and administration of medications in the treatment of reproductive disorders when given an assignment in the clinical area.

LEARNING ACTIVITIES

Directions: All of the information needed to complete Module D and to pass the test is included in this module and the PDR (Physician's Desk Reference). Exercises have been designed to help you learn the material and focus on areas not specifically included (such as recommended dosages for individual drugs).

Since so many medications are included in this module, an effort has been made to simplify your study for the test by placing a star next to the more common drugs that may be included on the test.

You will better understand these drugs if you first complete Module 17-G, "Nursing Care for Patients with Diseases of the Reproductive System."

Remember: Much of the information relating to these drugs is generalized and based upon the classification of the drug. Therefore, when giving a drug, LOOK UP EACH DRUG for its specific side effects, nursing considerations, actions, uses and dosage.

LEARNING ACTIVITIES - continued

ACTIVITY #1. Androgens

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*danazol	Danocrine
*fluoxymesterone	Halotestin
methandrostenolone	Dianobol
methyltestosterone	Android 5, Android 10
nandrolone decanoate	Deca-Durabolin
nandrolone phenpropionate	Durabolin
oxymetholone	Anapolon 50
stanozolol	Winstrol
*testosterone	Oreton
*testosterone cypionate	Depo-Testosterone
testosterone enanthate	DuraTestate
testosterone propionate	Oreton Propionate

The male hormone testosterone and its derivatives are called androgens because they aid in the development of male secondary sex characteristics, such as facial and body hair, deep voice and muscle development. They also have anabolic properties that stimulate the building and repair of body tissues through retention of nitrogen, potassium and phosphorus and a decrease in amino acid catabolism.

Major Uses

1. Treatment of the androgen-deficient male (primary hypogonadism, hypopituitarism, eunichism, impotence, oligospermia or climacteric symptoms).
2. Refractory anemias (aplastic, associated with chronic disease, and renal dialysis).
3. Menstrual disorders (menorrhagia, metrorrhagia, premenstrual tension, functional dysmenorrhea, menopausal symptoms) and endometriosis.
4. Suppression of lactation and postpartum breast engorgement.
5. Osteoporosis, burns, decubitus ulcers, delayed healing of fractures.
6. Protein depletion from long-term corticosteroid therapy, debilitating disease and convalescence, postop states and chronic malnutrition.
7. To promote weight gain and feeling of well-being.
8. In children with retarded growth and development.

LEARNING ACTIVITIES - continued

9. To relieve pain in advance metastatic mammary carcinoma in women.
10. To oppose estrogen effects in estrogen-dependent tumors and hyperestrogenic conditions.

Mechanism of Action

Androgens restore hormone in androgen-deficiency states.

Side Effects

1. Androgenic in female
    a. Acne
    b. Edema
    c. Oily skin
    d. Weight gain
    e. Hirsutism
    f. Hoarseness
    g. Clitoral enlargement
    h. Changes in libido
2. Androgenic in male
    a. Prepubertal
        (1) Premature epiphyseal closure
        (2) Acne
        (3) Priapism (abnormal and painful continual erection without sexual stimulation)
        (4) Growth of body and facial hair
        (5) Phallic enlargement
    b. Postpubertal
        (1) Testicular atrophy
        (2) Oligospermia
        (3) Decreased ejaculatory volume
        (4) Impotence

LEARNING ACTIVITIES - continued

(5) Gynecomastia

(6) Epididymitis

3. General

   a. Dizziness

   b. Headache

   c. Tremor

   d. Irritability

   e. Lethargy

   f. Nausea

   g. Vomiting

   h. Diarrhea

   i. Sodium retention

   j. Water retention

Nursing Considerations

1. Check intake and output and weight gain daily during dose adjustment period. Weight gain suggests the need for decreased dosage. When dosage is stabilized, urge the patient to check weight at least twice weekly and report weight gain, especially if accompanied by edema, as dose adjustment and diuretic therapy may be indicated.

2. In patients with metastatic breast cancer, hypercalcemia usually indicates progression of bone metastasis. Report immediately signs and symptoms of hypercalcemia (nausea, vomiting, constipation, lethargy, asthenia, loss of muscle tone, polydipsia, polyuria, dehydration, increased urine and serum calcium levels).

3. Report signs of virilization (voice change, growth of facial hair, etc.) in women, as treatment should then be reevaluated. These effects can be irreversible despite prompt discontinuation of therapy.

ACTIVITY #2. Gonadotropins

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*chorionic gonadrotropin, human	Pregnyl, Follutein, etc.
*menotropins	Pergonal

LEARNING ACTIVITIES - continued

Gonadotropins are purified preparations of hormones extracted from the urine of pregnant or postmenopausal women. The gonadotropin and menotropins contain both luteinizing hormone and follicle-stimulating hormone.

Major Uses

1. Treatment of gonadal deficiencies.

   Example:

   a. Cryptorchidism

   b. Hypogonadism

2. Induction of ovulation in anovulatory conditions.

Mechanism of Action

1. Stimulate secretions of gonadal hormones.

2. Stimulate ovarian follicle growth and maturation (follicle-stimulating hormone effect).

3. Cause ovulation and stimulate development of corpus luteum (luteinizing hormone effect).

Side Effects

a. Headache

b. Irritability

c. Depression

d. Fatigue

e. Gynecomastia

f. Edema

g. Fever

h. Nausea

i. Vomiting

j. Multiple births

k. Birth defects

LEARNING ACTIVITIES - continued

Nursing Considerations

1. The couple should be encouraged to have intercourse daily beginning on the day prior to the administration of these drugs until ovulation becomes apparent from the indices of progesterone production (rise in basal body temp, increased volume of thin and watery vaginal secretions).

2. The patient should be aware of statistics related to pregnancy with treatment using these drugs. Reportedly, there is a 20% frequency of multiple births, 15% of which may be twins, 5% of total pregnancies result in 3 or more fetuses of which 20% are viable.

3. Generally, pregnancy occurs within 4 to 6 courses of therapy.

4. Weight should be monitored during therapy as a clue to edema development. Dosage reduction may be indicated if edema develops.

ACTIVITY #3. Estrogens

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*chlorotrianisene	TACE
dienestrol	AVC Dienestrol Cream or Suppositories
*diethylstilbestrol (DES)	Stilbesterol
diethylstilbestrol diphosphate	Stilphostrol
esterified estrogens	Menest, Neo-estrone
estradiol	Estrace
estradiol cypionate	Depo-Estradiol Cypionate
estradiol valerate	Dura-Estradiol
*estrogen substances, conjugated	Premarin, Conest, etc.
estrone	Theelin
ethinyl estradiol	Estinyl

In women, estrogen is essential for normal sexual maturation at puberty, for maintaining the normal menstrual cycle and for balancing the secretions of the anterior pituitary and the ovaries.

Estrogens can be divided into two types:

1. Natural hormones secreted by the ovaries.

2. Synthetic derivative.

Major Uses

1. Correction of hormonal imbalances.

2. Replacement therapy in menopause and after complete hysterectomy.

LEARNING ACTIVITIES - continued

3. Palliative effect in prostatic and postmenopausal breast cancer.
4. Relief from postpartum breast engorgement. (Estrogens are known to inhibit the secretion of milk.)

Mechanism of Action

Stimulate or inhibit secretion of hypothalamic, pituitary and gonadal hormones that control sexual, endocrine and metabolic processes.

Side Effects

In females:

1. Nausea
2. Anorexia
3. Vomiting
4. Hirsutism
5. Mental depression
6. Insomnia
7. Breakthrough bleeding
8. Vaginal candidiasis
9. Hypercalcemia
10. Weight gain
11. Edema
12. Thromboembolism

In males:

1. Gynecomastia
2. Feminization
3. Impotence

LEARNING ACTIVITIES - continued

Nursing Considerations

1. Teach the patient to identify and promptly report signs of embolic disorders.
    a. Sudden severe headache
    b. Chest pain
    c. Unexplained visual disturbance
    d. Tenderness
    e. Pain and swelling of the legs
    f. Abdominal pain
    g. Edema
2. Reassure males that estrogen-induced feminization and impotence are reversible with termination of therapy.
3. Symptoms of vaginal candidiasis (thick, white curdlike secretions and inflamed congested introitus) should be reported promptly so that appropriate treatment may be started.
4. Advise patients to weigh themselves under standard conditions once or twice weekly and to report sudden weight gain or signs of fluid retention.
5. When hypercalcemia (normal CALCIUM: 9 to 10.6 mg/dl) occurs in patients with breast cancer, it is usually indicative of progression of bone metastasis and estrogen treatment is usually terminated.
6. Instruct the diabetic patient to report positive urine tests promptly as dosage adjustment of the diabetic drug may be indicated.
7. If a patient raises questions concerning the possiblity of estrogens causing cancer, reassure her of the safety of these hormones for women who have had a full physical exam.
8. It should be explained that bleeding after estrogen withdrawal is expected.
9. Diethylstilbestrol (DES) is a postcoital contraception (or the "morning after" pill) given as 25 mg PO BID for 5 days starting within 72 hours after coitus.

LEARNING ACTIVITIES - continued

ACTIVITY #4. Progesterones (Progestogens or Progestins)

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
dydrogesterone	Gynorest
ethisterone	Progestoral
hydroxyprogesterone caproate	Delalutin
*medroxyprogesterone acetate	Provera, DepoProvera
*norethindrone	Micronor, Norlutin
norethindrone acetate	Norlutate
norgestrel	Ovrette
*progesterone	Progestin

Progesterone and its synthetic derivatives are called progestogens or progestins. Progesterone is an ovarian hormone secreted primarily by the corpus luteum during the last half of the menstrual cycle. It causes swelling and development of the endometrium, necessary to prepare the uterus for implantation of a fertilized ovum. If implantation does not occur, the sharp drop in the progesterone level at the end of the menstrual cycle helps bring about menstruation. During pregnancy, the placenta secretes about 10 times the normal monthly amount of progesterone to help maintain the pregnancy. Progestogens are used mainly for menstrual disorders needing exogenous progesterone and for contraception.

Progesterone, meaning for gestation, is secreted in large amounts by the placenta during pregnancy and promotes the following adaptations in the pregnant woman.

1. Contributes to the increasing thickness of the endometrium with deposits of glycogen and mucin.

2. Causes cells to develop in the endometrium that nourish the young embryo.

3. Decreases uterine contractions, preventing spontaneous abortion.

4. Prepares the breast for lactation.

Major Uses

1. Treatment of:

    a. Dysfunctional uterine bleeding.

    b. Amenorrhea.

    c. Dysmenorrhea.

2. Treatment of endometriosis.

3. Palliative effect in endometrial cancer.

LEARNING ACTIVITIES - continued

Mechanism of Action

1. Produces secretory changes in the endometrium.
2. Causes withdrawal bleeding when estrogen is present.
3. Inhibits pituitary gonadotropin secretion and possibly conception.
4. Relaxes uterine smooth muscle, which helps prevent expulsion of implanted ovum.

Side Effects

1. Thrombophlebitis
2. Greasy hair
3. Rash
4. GI disturbances
5. Premenstrual depression
6. Fluid retention
7. Reduced menstrual loss
8. Breakthrough bleeding
9. Hyperglycemia

Nursing Considerations

1. Failure rate of the "mini-pill" (Micronor), a progestin-only contraceptive, is 2.54 pregnancies per 100 women or three times higher than the progestin-estrogen combination pill.
2. Perineal itching and burning may signal onset of vaginal candidiasis (secondary to progestogen excess) or cystitislike syndrome.
3. Instruct the diabetic patient to report positive urine tests immediately as doage adjustment of the diabetic drug may be indicated.
4. Urge the patient to promptly report pain, tenderness and redness of the extremity that may indicate thrombophlebitis. Thrombophlebitis may be indicated by a positive Homan's sign (pain in the calf and popliteal region with forced dorsiflexion of the foot).

LEARNING ACTIVITIES - continued

5. Teach the patient to differentiate between withdrawal and breakthrough bleeding.
   a. Withdrawal bleeding follows discontinuation of the drug within 3 to 4 days and is expected.
   b. Breakthrough bleeding and spotting occur intermenstrually and should be reported. Dose adjustment or discontinuation may be indicated.

ACTIVITY #5. Oral Contraceptives

Directions: Read the following.

GENERIC NAMES	TRADE NAMES	
estrogen with progestogen	Brevicon	Norinyl
	Demulen	Norlestrin
	Enovid	Ortho-Novum
	Loestrin	Ovcon
	Lo/Ovral	Ovulen
	Min-Ovral	Ovral
	Modicon	Zorane

Estrogen-progestogen combinations were introduced as oral contraceptives in the U.S. in 1960. They are the most effective contraceptives available. The pill is available in two forms:

1. Combination - with the combination form, each pill contains progestin and estrogen.
2. Sequential - with the sequential form, the first series of pills (sixteen or more or less) contain estrogen and the last series of pills contain estrogen and progestogen combined.

For both forms, the doctor may order the 21-day packet or the 28-day packet. With the 21-day series, one pill is taken daily for 21 days, then discontinued for 7 days, and the pill cycle restarted on the 5th day after the onset of menstrual flow. The 28-day series contains a pill for each day, but the last seven pills contain a placebo substance.

Major Use

1. Contraception.
2. Correction of menstrual disorders, such as endometriosis and hypermenorrhea.

LEARNING ACTIVITIES - continued

Mechanism of Action

1. Cause thickening of cervical mucus, which inhibits sperm movement.
2. Produce atrophic changes in the endometrium, reducing the chance of implantation of a fertilized ovum. In endometriosis, high dose combinations cause thinning of endometrial tissue after several dosing cycles.
3. The combination of estrogen and progesterone suppresses FSH and maintains the uterine lining, therefore preventing ovulation.

Side Effects

1. Headache
2. Depression
3. Libido changes
4. Thrombophlebitis
5. Nausea
6. Vomiting
7. Anorexia
8. Bloating
9. Breakthrough bleeding
10. Breast tenderness
11. Weight gain
12. Vaginal candidiasis
13. Hyperglycemia
14. Acne
15. Leg cramps

Nursing Considerations

1. The drugs are contraindicated in cases involving a history of thromboembolic disorders, cerebrovascular or coronary artery disease (CAD), known or suspected cancer of the breast or reproductive organs, suspected pregnancy, women older than 35 years who smoke more than 15 cigarettes per day and all women older than 40.

LEARNING ACTIVITIES - continued

2. Warn the patient that headache, nausea, dizziness, breast tenderness, spotting and breakthrough bleeding are common at first. These should diminish after 3 to 6 dosing cycles. However, breakthrough bleeding in patients taking high-dose estrogen-progestogen combinations for menstrual disorders may require dosage adjustment.

3. Warn the patient to watch for and immediately report abdominal pain, numbness, stiffness or pain in the buttocks or legs, pressure or pain in the chest, shortness of breath, severe headache, visual disturbances, undiagnosed vaginal bleeding or discharge, 2 consecutive missed menstrual periods, lumps in the breasts, swelling of hands or feet.

4. Oral contraceptives are highly effective. The pregnancy rate in women using conventional combination oral contraceptives is generally reported to be less than one pregnancy per 100 women. With the progestogen-only oral contraceptives (mini-pills) the rates increase to 3 pregnancies per 100 women. Compare these rates to those of the following forms of birth control.

Pregnancies Per 100 Women

METHOD	RANGE
IUD	Less than 1 to 6
Diaphragm with spermicidal cream or gel	2 to 20
Condom	3 to 36
Spermicidal gels and creams	4 to 36
Spermicidal aerosol forms	2 to 29
Periodic abstinence (rhythm), all types	less than 1 to 47
all types	less than 1 to 47
calendar method	14 to 47
temperature method	1 to 20
temperature method (intercourse only in post-ovulatory phase)	less than 1 to 7
Mucus method	1 to 25
No contraception	60 to 80

5. The failure of oral contraceptives results from missed doses. In the first week of the initial cycle of oral contraceptives, the patient should also use an additional method of birth control.

   If the patient forgets to take a pill, she should take it as soon as she remembers or should take 2 pills the next day. If 2 consecutive pills are omitted, she should begin using another method of contraception for the next 7 days then take 2 tablets daily for 2 days, then resume regular schedule. If 3 consecutive doses are missed, cycle should be resumed 7 days after last tablet was taken and an alternate method of contraception should be used while not taking tablets and 7 days into the new schedule.

LEARNING ACTIVITIES - continued

6. Cigarette smoking increases the risk of serious cardiovascular side effects from oral contraceptive usage. This risk increases with age and with heavy smoking (15 or more cigarettes per day) and is quite marked in women over 35 years of age. Women who use oral contraceptives should be strongly advised not to smoke. (See Tables I & II)

Summary of relative risks of thromboembolic disorders and other vascular problems in oral contraceptive users compared with nonusers:

DISORDER	RELATIVE RISK
Idiopathic thromboembolic disease	2 to 11 times greater
Postsurgery thromboembolic complications	4 to 7 times greater
Thrombotic stroke	4 to 9.5 times greater
Hemorrhagic stroke	2.0 to 2.3 times greater
Myocardial infarction	2 to 12 times greater

TABLE I

Myocardial Infarction

	WOMEN AGED 30 to 39		WOMEN AGED 40 to 44	
Smoking Habits	Users	Nonusers	Users	Nonusers
All Smokers	10.2	2.6	62.0	15.9
Heavy	13.0	5.1	78.7	31.3
Light	4.7	0.9	28.6	5.7
Non-Smokers	1.8	1.2	10.7	7.4
Smokers & Non-Smokers	5.4	1.9	32.8	11.7

(*Heavy - 15 or more cigarettes per day)

TABLE II

LEARNING ACTIVITIES - continued

ACTIVITY #6. Review Exercises

Directions: Answer the following questions. Answers can be found by rereading this module and using your PDR.

1. Indicate usual dosages and patient teaching you would give for the following medications:

   a. Halotestin: ______________________________

   ____

   ____

   b. Diethylstilbestrol: ______________________________

   ____

   ____

   c. Premarin: ______________________________

   ____

   ____

   d. Pergonal: ______________________________

   ____

   ____

   e. Provera: ______________________________

   ____

   ____

   f. Ortho-Novum: ______________________________

   ____

   ____

LEARNING ACTIVITIES - continued

2. Androgens are used clinically for which of the following:

   a. Postpartum breast engorgement: ____________
   b. Contraception: ____________
   c. Castration: ____________
   d. Heavy bleeding and clotting (vaginal) ____________
   e. Anovulation: ____________
   f. Cancer of the prostate: ____________
   g. Hypogonadism: ____________
   h. Cancer of the breast in women: ____________

3. What side effects are produced by testosterone?

in women	in men
____________	____________
____________	____________
____________	____________
____________	____________

4. Gondotropins are used in the treatment of undescended testicles.

   TRUE FALSE

5. List four uses of estrogen therapy.

   ____

   ____

   ____

   ____

6. Thromboembolic disorders related to the use of estrogens and progestins may be manifested by which of the following:

   a. Sudden, severe headache
   b. Chest pain
   c. Visual disturbance
   d. Positive Homan's sign
   e. Edema
   f. Leg pain

7. The medication used as the "morning after" pill is ____________

8. The medication also known as the "mini-pill" is ____________

9. The term "the pill" refers to ____________

LEARNING ACTIVITIES - continued

10. ________________ is secreted by the placenta in large amounts during pregnancy and functions to ____________________, which prevents spontaneous abortion and prepares the breasts for ______________________.

11. Define:

    a. Combination oral contraceptive: ________________________________

    ____

    ____

    b. Sequential oral contraceptive: ________________________________

    ____

    ____

12. Side effects considered common and not necessarily life-threatening with initial use of oral contraceptives may include:

    ____________________ ____________________

    ____________________ ____________________

    ____________________ ____________________

    ____________________ ____________________

13. Serious side effects associated with the use of oral contraceptives that would require the patient to notify a doctor immediately are:

    ____________________ ____________________

    ____________________ ____________________

    ____________________ ____________________

    ____________________ ____________________

    ____________________ ____________________

    ____________________ ____________________

14. Farrah Forgetmost has forgotten to take her oral contraceptive for the last two days and does not know what to do. What instructions would you give her?

    ____

    ____

LEARNING ACTIVITIES - concluded

15. Why is smoking a factor to be considered in the use of oral contraceptives?

____

____

ACTIVITY #7. How Calculating Are You?

Directions: Complete the following problems showing your work, and turn them in to your instructor at the beginning of the lecture "Drugs Used in the Treatment of Reproductive Disorders, or Everything You've Always Wanted to Know About Reproductive Drugs...But Were Afraid to Ask."

1. 0.7 X 0.003 =
2. $34\overline{)2.38}$
3. 1/4 grain = _____mg
4. 1500 grams = _____grams
5. Tinc. belladonna gtts X = _____m = _____cc
6. Seconal grain iss = _____mg = _____grams
7. Negram 0.5 gram = _____mg = _____grain
8. IV 1000 cc to infuse in over 24 hours. Drip chamber delivers 10 gtts/cc. _____cc/hr _____gtts/min.
9. On hand - 2.5 mg tablets
   Ordered: 10 mg
10. Dose ordered: grain 1/20
    On hand - grain 1/16 in 1 cc
11. Dose ordered: 6,500 units
    On hand - 7,000 units/1cc
12. Dose ordered: 1.75 mg
    On hand - 2 mg/1 cc
13. Dose ordered: 37.5 mg
    On hand - 50 mg/1 cc
14. Dose ordered: 1.15 mg
    On hand - 0.2 mg in 1 cc

PHARMACOLOGY

Module H, Part II - Medications Used in the Treatment of Disorders of the Nervous System

RATIONALE

In order to provide optimal nursing care you must understand how to prepare and administer medications to a patient with a disorder related to the nervous system and you must understand how these medications can affect that patient.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the classifications of drugs commonly used in the treatment of nervous system disorders.
2. Identify side effects of drugs commonly used in the treatment of nervous system disorders.
3. Identify nursing considerations that relate to the administration of drugs used in the treatment of nervous system disorders.
4. Identify major uses for selected drugs in the treatment of nervous system disorders.
5. Be able to calculate and convert dosages for drug administration.
6. Demonstrate setup and administration of medications in the treatment of nervous system disorders when given an assignment in the clinical area.

LEARNING ACTIVITIES

Directions: All of the information needed to complete Module H and to pass the test is included in this module and the PDR (Physician's Desk Reference). Exercises have been designed to help you learn the material and focus on areas not specifically included, such as recommended dosages for individual drugs.

Since so many medications are included in this module, an effort has been made to simplify your study for the test by placing a star next to the more common drugs that may be included on the test.

You will better understand these drugs if you first complete Module 17-H, "Nursing Care for Patients with Diseases of the Nervous System."

LEARNING ACTIVITIES - continued

ACTIVITY #1. Nonnarcotic Analgesics and Antipyretics

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*acetaminophen	Tylenol
*aspirin (acetylsalicylic acid)	Bayer, Anacin, etc.
*ethoheptazine citrate	Zactane
fenoprofen calcium	Nalfon
*ibuprofen	Motrin
*indomethacin	Indocin
*magnesium salicylate	Mobiden
mefenamic acid	Ponstan, Ponstel
naproxen	Naprosyn
*oxyphenbutazone	Oxalid, Tandearil
*pentazocine	Talwin
phenacetin	
*phenazopyridine HCL	Pyridium
phenylbutazone	Butazolidin
*propoxyphene napsylate	Darvocette N, Darvon N
propoxyphene HCL	Darvon
*sulindac	Clinoril
tolmetin sodium	Tolectin

Analgesics are agents that relieve pain without producing loss of consciousness and reflex activity. Frequently these drugs contain aspirin or salicylates or are of synthetic origin.

Major Use

1. Relief of mild to moderate pain and fever.
2. Reduction of inflammation associated with:
    a. Rheumatoid arthritis.
    b. Gout.
    c. Osteoarthritis.
    d. Other inflammatory conditions.

Mechanism of Action

1. Depression of peripheral nerve endings to block pain impulses.
2. Directly affect the hypothalamus to lower body temperature.
3. Pyridium produces local topical analgesia or anesthesia of the urinary tract mucosa.

LEARNING ACTIVITIES - continued

Side Effects

These vary from medication to medication, but may include:

1. GI distress.
2. Allergy symptoms.

Look up each drug before giving it.

Nursing Considerations

1. Some nonnarcotic analgesics are subject to habituation or abuse and therefore, may be kept in the locked narcotic cabinet. Example:
    a. Talwin
    b. Darvon
    c. Darvocette N
2. Tylenol has an analgesic and antipyretic effect, but no anti-inflammatory effect, while aspirin exhibits an antipyretic, analgesic and anti-inflammatory effect.
3. Overdose or chronic unsupervised use of Tylenol may cause liver damage in the form of fulminating hepatic necrosis.
4. Aspirin and products containing ASA should be used cautiously in:
    a. Vitamin K deficiency.
    b. Bleeding disorders.
    c. Hypoprothrombinemia.
    d. Asthmatics with nasal polyps (severe bronchospasm may occur).
5. Aspirin and products containing ASA should be given with food, milk or antacid to reduce GI side effects.
6. Some products are enteric-coated or come as timed release capsules to prolong the effect or to avoid absorption in the stomach. These agents are absorbed erratically and are not indicated for chronic usage.
7. Pyridium will color the urine red or orange and may stain fabrics.

LEARNING ACTIVITIES - continued

ACTIVITY #2. Narcotic Analgesics

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
anileridine HCL	Leritene (schedule II)
*codeine phosphate; codiene sulfate	Codeine (schedule II)
*fentanyl citrate	Sublimaze (schedule II)
*hydromorphone sulfate	Dilaudid (schedule II)
levorphanol tartrate	Levo Dromoran (schedule II)
*meperidine HCL	Demerol (schedule II)
*methadone HCL	Dolophine (schedule II)
*morphine sulfate	Morphine (schedule II)
*oxycodone HCL	Percocet, Tylox, Percodan (schedule II)
oxymorphone HCL	Numorphan (schedule II)

Narcotic analgesics relieve pain without loss of consciousness but may cause physical and psychological dependency. The drugs are controlled substances as defined in the Comprehensive Drug Abuse Prevention and Control Act of 1970.

Controlled Substance Act

Federal laws in effect since 1914 regulate the importation, sale and use of narcotics and other drugs subject to abuse. In 1970, the Controlled Act replaced older laws requiring all persons or agencies who sell, dispense or prescribe controlled substances to register with the Department of Internal Revenue and account for all controlled substances they sell, dispense or prescribe. It further requires that an accurate record be kept by all persons, including nurses, who handle these drugs, thus all narcotics must be signed out in the narcotic book. This record must be kept for two years.

Drugs regulated by the Controlled Substance Law are divided into five schedules:

1. Schedule I - Drugs having no accepted medical use in the U.S. with a high potential for abuse.

   a. Heroin
   b. Marijuana (being used on an experimental basis in some areas)
   c. LSD
   d. Peyote
   e. Mescaline
   f. Psilocybin
   g. Others

2. Schedule II - Drugs with a high potential for abuse with possible severe psychic or physical dependency.

   a. Morphine
   b. Codeine
   c. Dilaudid

LEARNING ACTIVITIES - continued

   d. Methadone
   e. Pantopan
   f. Demerol
   g. Cocaine
   h. Leritene

3. Schedule III - Drugs having less abuse potential than drugs in schedule II (includes compounds containing certain narcotic and non-narcotic drugs)

   a. ASA with codeine
   b. Empirin with codeine
   c. Tylenol with codeine
   d. Phenaphen with codeine
   e. Some with codeine, paregoric
   f. Butisol
   g. Alurate

4. Schedule IV - Drugs with less abuse potential than the drugs in schedule III.

   a. Barbital
   b. Phenobarbital
   c. Methylphenobarbital
   d. Chloral betaine
   e. Chloral hydrate
   f. Paraldehyde
   g. Placidyl
   h. Equinil

5. Schedule V - Drugs with less abuse potential than the drugs of schedule IV. (contains preparations of limited quantities of certain narcotics usually used for antitussive or antidiarrheal purposes)

   a. Terpin hydrate with codeine
   b. Robitussin AC
   c. Milk of bismuth with paregoric

Major Uses

1. Relief of moderate to severe pain.

2. Preop sedation, alone or in combination with tranquilizers or sedatives.

Mechanisms of Action

1. These drugs may act on the sensory cortex of the brain to produce analgesia, but the precise mechanism of action is not known.

2. These drugs may interfere with pain conduction or CNS response to pain, thus altering the patient's emotional response to pain.

LEARNING ACTIVITIES - continued

Side Effects

1. Psychological dependence
2. Physical dependence
3. Drowsiness
4. Euphoria
5. Suppression of the cough reflex
6. Respiratory depression
7. Nausea and vomiting
8. Hypotension
9. Tachycardia or bradycardia
10. Constipation
11. Anorexia
12. Urinary urgency
13. Difficulty voiding
14. Decreased output

Nursing Considerations

1. In patients receiving repeated doses, note the respiratory rate, depth, rhythm and size of the pupils. If the respirations are 12 per minute or less and the pupils are dilated or constricted or breathing is shallow, consult the physician before administering the drug.

2. Caution patients not to smoke or ambulate without assistance after receiving the drug because of the hypotension and drowsiness caused by decreased ability of the cardiovascular system to respond to gravitational shifts. Caution ambulatory patients to avoid driving or engaging in hazardous activities until drowsiness and dizziness have passed.

3. Narcotic analgesics should be given in the smallest effective dose and for the least period of time compatible with the patient's needs to prevent drug habituation or abuse. Drug addiction may include the following.

    a. Compulsive desire or craving to use the drug.

    b. A tendency to increase the dosage.

LEARNING ACTIVITIES - continued

c. Involvement with the drug to the exclusion of all other activities such as work, recreation, school and family.

d. A strong tendency to return to drug use after withdrawal.

e. Physical dependency.

f. The absence of the drug produces moderate to severe physical reactions which may include:

  (1) Drug craving
  (2) Anxiety
  (3) Irritability
  (4) Perspiration
  (5) Yawning
  (6) Rhinorrhea
  (7) Itchy nose
  (8) Sneezing
  (9) Lacrimation
  (10) Pupil dilation
  (11) Piloerection
  (12) Tremulousness
  (13) Muscle jerk
  (14) Bone and muscle aches
  (15) Nausea
  (16) Hot and cold flashes
  (17) Tossing
  (18) Restless sleep
  (19) Increased systolic blood pressure
  (20) Increased temperature

LEARNING ACTIVITIES - continued

(21) Pulse and respiration

(22) Fetal position

(23) Vomiting

(24) Diarrhea

(25) Weight loss after 3 days

(26) Hemoconcentration

(27) Spontaneous ejaculation or orgasm

Drug habituation may include the following:

a. A desire to use a drug continually for the effects produced.

b. Little or no tendency to increase the dosage.

c. No physical dependence, rather psychological dependence.

d. When the drug is withdrawn, there is no true physical abstinence syndrome.

4. Give the drug as soon as possible after request (according to doctor's order) and tell the patient what the medication is for.

5. Some drugs are a combination of narcotic and nonnarcotic substances. Drugs marked with a number after their names (e.g. Empirin #3) are combined with codeine on the following schedule:

#1 - 1/8 grain or 7 1/2 mg codeine
#2 - 1/4 grain of 15 mg codeine
#3 - 1/2 grain or 30 mg codeine
#4 - 1 grain or 60 mg codeine

ACTIVITY #3. Narcotic Antagonists (Analeptics)

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*levallorphan	Lorfan
nalorphine HCL	Nalline
*naloxone	Narcan

Nalline and Lorfan are weak narcotics that compete with stronger narcotics for central nervous system receptor sites and thus act as antagonists. Narcan has no depressant action of its own but acts as a pure antagonist.

LEARNING ACTIVITIES - continued

Major Uses

1. As an antidote for narcotic-induced respiratory depression, including asphyxia neonatorum.

2. With a diagnosis of suspected acute opiate overdosage (Narcon).

Side Effects

May cause withdrawal symptoms if given to a person addicted to narcotics.

1. Nausea

Nursing Considerations

1. May wear off before the narcotic.

2. Respiration depth and rate should be monitored. Be prepared to give oxygen ventilation and other resuscitative measures.

ACTIVITY #4. Sedatives and Hypnotics

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*amobarbital	Amytal (schedule II)
amobarbital sodium	Amytal Sodium (schedule II)
barbital	Barbital Sodium (schedule IV
butabarbital	Butisol (schedule IV)
butabarbital sodium	Butisol Sodium (schedule III)
*chloral hydrate	Noctec (schedule IV)
*ethchlorvynol	Placidyl (schedule IV)
ethinamate	Valmid (schedule IV)
*flurazepam HCL	Dalmane (schedule II)
*glutethimide	Doriden (schedule III)
hexobarbital	Sombulex (schedule III)
	Mebaral (schedule IV)
*methaqualone	Quaalude (schedule II)
methaqualone HCL	Parest
	Levoprome
methyprylon	Noludar (schedule III)
paraldehyde	Paral (schedule II)
*pentobarbital sodium	Nembutal (schedule II)
*phenobarbital	Luminal (schedule II)
phenobarbital sodium	Luminal Sodium (schedule II)
propiomazine HCL	Largon
*secobarbital	Seconal (schedule II)
secobarbital sodium	Sodium Seconal (schedule II)

LEARNING ACTIVITIES - continued

Sedatives and hypnotics are used primarily to treat insomnia and to provide preoperative sedation and relief of anxiety. The classification of the drug is determined by the dose. Sedatives quiet and relax without causing sleep; hypnotics induce sleep. They are not analgesics.

Major Uses

1. Treatment of insomnia or induction of sleep before surgery or test procedure.
2. Sedation and relief of anxiety.
3. Alleviation of alcohol withdrawal syndrome.
4. Control of status epilepticus, acute convulsive disorders or acute psychotic agitation.
5. Prevention of nausea and vomiting.
6. Some are used as basal or general anesthetics.

Mechanism of Action

All sedatives and hypnotics depress the CNS and most can produce effects ranging from mild sedation to hypnosis to deep coma to death, depending on dosage, route of administration, absorption, distribution, metabolism and excretion of the individual drug and patient susceptibility. Some may relax skeletal muscles, alter temperature regulation, produce amnesia, cause local anesthesia, moderate convulsions or have antiemetic effects.

Side Effects

1. Bad dreams
2. Restlessness
3. Rash
4. Facial edema
5. Euphoria
6. Confusion
7. "Hangover"
8. Death with overdose as a result of respiratory paralysis

Nursing Considerations

1. DANGER!!! Alcohol Intensifies Depressant Action
2. Long-term use leads to habituation

LEARNING ACTIVITIES - continued

3. These drugs should never be used during daytime as they interfere with sleep at night.

4. Research has shown that sleep consists of four stages occuring in regular cyclic patterns.

   Stage I - Onset of sleep is a drowsy period and brain waves are fast and frequent (similar to that of an awake individual).

   Stage II - The brain waves become slower in frequency.

   Stage III & Stage IV - Deep sleep stages, the brain waves are slow and show great height and depth.

   Day Staff

   a. Encourage naps in the morning rather than the afternoon. A morning nap is usually a light sleep and it is more likely to leave the patient feeling refreshed. Also, a patient who naps in the morning is more likely feel tired enough by evening to fall asleep again.

   b. Try to keep the patient as busy as his/her condition permits during the day.

   c. Check your patient's history for unresolved anxiety such as situations at home that may be cause for worry in the hospital.

      (1) Financial problems

      (2) Invalid spouse at home

      Help end the worry by getting your patient in touch with a hospital social worker.

   Evening Staff

   a. Find out what your patient's sleep routine was at home and, whenever possible, try to let the patient follow it. Certain rituals can aid sleep.

      (1) Bedtime snack

      (2) A favorite pillow

   b. Offer backrubs.

   c. Straighten linens.

   d. Close curtains to block out light.

   e. If advisable, close the door to patient's room.

   f. If your patient requires pain medication, try to give it early so the patient will be relaxed by bedtime.

LEARNING ACTIVITIES - continued

Night Shift

- a. Find out who isn't sleeping and why.
- b. Be sure unit lights are dim and unnecessary lights are out.
- c. When checking on your patient, be as quiet as possible.
- d. Turn off nurses' station radio or make sure the patients can't hear it.
- e. After establishing a successful sleep plan for a specific patient, write it down so that it can be followed again.

5. After giving a sedative/hypnotic:
   - a. Make sure side rails are up.
   - b. Call light is within easy reach.
   - c. Be aware that confusion and restlessness may occur, especially in the elderly.

ACTIVITY #5. Tranquilizers

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*chlordiazepoxide HCL	Librium (schedule IV)
chlormezanone	Fenarol, Trancopal
*clorazepate dipotassium	Tranxene (schedule IV)
*diazepam	Valium (schedule IV)
*hydroxyzine HCL	Atarax, Vistaril (Parenteral)
hydroxyzine pamoate	Vistaril (oral)
lorazepam	Ativan (schedule IV)
*meprobamate	Equanil, Miltown (schedule IV)
*oxazepam	Serax (schedule IV)

Tranquilizers reduce anxiety without inducing drowsiness or sleep. They are indicated for patients suffering from various neuroses or mild depression. Most have muscle relaxant and anticonvulsive properties; others provide an antiemetic effect. They produce a dose-dependent, nonspecific CNS depression.

Major Uses

1. For suppression of:
   - a. Anxiety.
   - b. Tension.
   - c. Fear.

LEARNING ACTIVITIES - continued

2. For treatment and prevention of alcohol withdrawal symptoms.
3. For premedication for anesthesia or IV general anesthesia for short procedures.
    a. Valium
4. For prevention of convulsions and treatment of status epilepticus.
    a. Valium
5. For relaxation of skeletal muscles.

Side Effects

1. Drowsiness
2. Hypotension
3. Blurred vision
4. Dry mouth

Nursing Consideratons

1. LIBRIUM AND VALIUM CANNOT BE MIXED WITH ANY OTHER DRUG IN THE SAME SYRINGE.
2. The possibility of drug abuse addiction exists with many of these drugs.
3. Because of the drowsiness and lethargy produced by many of these drugs, the patient should be warned not to drive or operate dangerous machinery until response to the drug has been determined.
4. Patients should be warned not to combine these drugs with alcohol or other depressants.
5. When giving Equanil orally, give with food to reduce gastric distress.
6. Prevent hoarding or self-overdosing by patients who are:
    a. Depressed.
    b. Suicidal.
    c. Drug dependent.
    d. Have a history of drug abuse.

LEARNING ACTIVITIES - continued

7. Watch for signs of barbituate toxicity.
   a. Coma
   b. Pupillary constriction
   c. Cyanosis
   d. Clammy skin
   e. Hypotension
8. Warn against hazardous activity requiring alertness or skill while under the influence of these medications.

ACTIVITY #8. Antidepressants

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*amitriptyline HCL	Elavil (TAC)
desipramine HCL	Norpramin (TCA)
*doxepin HCL	Sinequan (TCA)
*imipramine HCL	Tofranil (TCA)
isocarboxazid	Marplan (MAOI)
*nortriptyline HCL	Aventyl (TCA)
phenelzine sulfate	Nardil (MAO)
tranylcypromine sulfate	Vivactil (TAC)

Depression is one of the most common psychiatric disorders and involves many body systems. Change in affect (mood) is one of the primary symptoms, but other symptoms include:

1. Sleep disturbance.
2. Decreased activity.
3. Appetite change.
4. Morbid preoccupation.

Amphetamines and other psychomotor stimulants, the original antidepressants, have recently been replaced by tricylic antidepressants (TCA) and monoamine oxidase inhibitors (MAO inhibitors). Because the TCA are less toxic than the MAO inhibitors, they are the first drug of choice and at least 2 TCA's are usually tried before MAO therapy.

Major Uses

1. Treatment of psychotic and neurotic depressions; TCA's are less effective for reactive or mild depressions.

LEARNING ACTIVITIES - continued

2. Prevention of recurrent depression as in manic-depressive illness.
3. Treatment of eneuresis in children and adolescents (Tolfranil and other TCA's).

Side Effects

TCA

1. Dizziness
2. Tremors
3. Memory impairment
4. Blurred vision
5. Dry mouth
6. Anorexia
7. Impotence

MAO

1. Bone marrow depression
2. Sedation
3. Confusion
4. Insomnia
5. Hallucinations
6. Orthostatic hypotension or hypertension
7. Nausea
8. Vomiting
9. Dry mouth
10. Urinary retention

LEARNING ACTIVITIES - continued

Nursing Considerations (TCA)

1. Drug should not be withdrawn abruptly.

2. Monitor therapy by:

    a. Watching for increased psychotic symptoms and reducing dose if they occur; chart mood changes.

    b. Watching for suicidal tendencies.

    c. Checking for urinary retention and constipation.

3. Discharge teaching should include:

    a. Warning patient against driving car or operating dangerous machinery until body's response to drug has been established.

    b. Warning patient not to combine drug with alcohol or other depressants.

    c. Explaining to the patient that a period of 10 to 14 days and possibly up to 30 days may be necessary before antidepressant effects are noticed.

    d. Dry mouth often is a side effect. Sucking on hard candy may help alleviate it.

    e. Encouraging adequate fluid intake to lessen constipation.

Nursing Consideration (MAO)

1. Watch for suicidal tendencies.

2. Drug should not be abruptly withdrawn.

3. Patient teaching for discharge should include:

    a. Warning patients to avoid eating foods high in tyramine or tryptophan. These foods may include:

        (1) Cheese

        (2) Baked potatoes

        (3) Beer

        (4) Wine

        (5) Fish

        (6) Yogurt

        (7) Liver and onions

LEARNING ACTIVITIES - continued

b. Warning patients to avoid self-medication with over-the-counter cold, hayfever or reducing preparations.

c. Warning patients to avoid large amounts of caffeine.

d. Warning patients to avoid combining drug with alcohol or other depressants.

e. Explaining to patient that it may be necessary to get out of bed slowly and sit on edge of bed for a moment due to orthostatic hypotension.

f. Explaining to patient that period of 1 to 4 weeks may pass before antidepressant effects will be noticed.

ACTIVITY #7. Antipsychotics

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*chlorpromazine HCL	Thorazine
*droperidol	Inapsine
*fluphenazine	Prolixin
*haloperidol	Haldol
loxapine succinate	Loxapac
mesoridazine besylate	Serentil
perphenazine	Trilafon
*prochlorperazine	Compazine
*promazine HCL	Sparine
*thioridazine HCL	Mellaril
*trifluoperazine HCL	Stelazine
triflupromazine HCL	Vesprin

Antipsychotic (neuroleptic) drugs help control symptoms of acute and chronic schizophrenia but do not correct basic psychotic processes. They also treat organic psychoses and control acute mania in manic depression. These agents modify thought disorder, blunted effect and psychomotor retardation and lessen paranoid symptoms, agitation, hallucinations, delusions and autistic behavior. Some are also used as antiemetics, antihistamines or antipruritics. Since their advent in the early 1950's, these drugs have tremendously reduced the number of persons requiring hospitalization.

Because antipsychotics have many side effects, they should be reserved for major psychiatric illnesses. For lesser ailments, it is safer to use the antianxiety agents or barbituates.

LEARNING ACTIVITIES - continued

Major Uses

1. Symptomatic treatment of acute and chronic psychoses, especially with increased psychomotor activity.
2. Control of nausea and vomiting.
3. Control of agitation in organic brain syndromes.
4. Management of acute agitation in alcohol withdrawal or alcoholic hallucinations.

Side Effects

These are numerous and vary from agent to agent, but include:

1. Blood dyscrasias
2. Drowsiness
3. Orthostatic hypotension
4. Anorexia
5. Impotence
6. Visual impairment
7. Dizziness
8. Dry mouth

Nursing Considerations

1. Hold the dose and notify the doctor if the patient develops symptoms of:
    a. Blood dyscrasias
        (1) Fever
        (2) Sore throat
        (3) Infections
        (4) Cellulitis
        (5) Weakness

LEARNING ACTIVITIES - continued

2. Patient discharge teaching should include:
   a. Warning the patient to wear sunscreening agent and protective clothing to avoid photosensitivity.
   b. Warning the patient to avoid using these medications with alcohol or other depressants.
   c. Warning the patient to avoid driving a car or operating heavy or dangerous machinery until the response to the drug is determined.
   d. Advise the patient to get up slowly from a lying or sitting position.
3. Encourage the patient to suck on hard candy, chew gum or to rinse mouth frequently to help relieve dry mouth.
4. COMPAZINE SHOULD NEVER BE MIXED IN THE SAME SYRINGE WITH ANY OTHER DRUG.

ACTIVITY #8. Cerebral Stimulants

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*amphetamine	Benzedrine
*caffeine	Nodoz, Caffeine Na Benzoate
*dextroamphetamine	Dexedrine
diethylpropion HCL	Dietec, Tenuate
	Pondimin
	Sanorex
methamphetamine HCL	Desoxyn
*methylphenidate HCL	Ritalin
phendimetrazine bitartrate	Anorex
*phenmatrazine HCL	Preludin

Cerebral stimulants or the amphetamine and related drugs stimulate the cerebral cortex of the brain. A major use has been appetite suppression. They are not used to combat depressive states. Stimulants cause faster thinking and quicker reactions.

NOTE: This does not mean better judgement, only faster.

LEARNING ACTIVITIES - continued

Major Uses

1. Appetite suppression and weight reduction in the person who has difficulty saying no to food. To be used on a short-term basis in conjunction with dieting.
2. Treatment of narcolepsy.
3. Treatment of minimal brain dysfunction in connection with other remedial measures, as in children with hyperkinesis.
4. Treatment of nocturnal eneuresis.
5. Occasionally for treatment of mild cases of depression following childbirth and in old age and alleviation of chronic fatigue.

Side Effects

1. Depression may follow large doses
2. Urticaria
3. Restlessness
4. Talkativeness
5. Insomnia
6. Dry mouth
7. Constipation
8. Increased cardiac output and rate
9. Increased production of pepsin and gastric acid (caffeine)

Nursing Considerations

1. Psychic dependency or habituation may occur, especially in patients with history of drug addiction; avoid prolonged administration.
2. Warn the patient against engaging in driving or hazardous tasks until response to the drug has been determined.
3. When administering for obesity, be sure the patient is also on a weight-reduction program. Give 30 to 60 minutes AC.

LEARNING ACTIVITIES - continued

4. Caffeine is contraindicated in patients with hypersensitivity to caffeine or gastric or duodenal ulcer. Caffeine is found in:

a.	Cola beverages	-	17	to	55	mg/180 cc
b.	Tea	-	40	to	100	mg/180 cc
c.	Instant coffee	-	60	to	180	mg/180 cc
d.	Brewed coffee	-	100	to	150	mg/100 cc

5. Amphetamines should not be given to patients with:
    a. Hypertension.
    b. Cardiovascular disease.

ACTIVITY #9. Anticonvulsants

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*acetazolamide	Diamox
*carbamazepine	Tegretol
clonazepam	Rivotril (schedule IV)
*diazepam	Valium (schedule IV)
ethosuximide	Zarontin
*magnesium sulfate	
mephenytoin	Mesantoin
*paraldehyde	Paral (schedule IV)
paramethadione	Paradione
	Phenurone
*phenobarbital	Luminal
*phenytoin	Dilantin
*primidone	Mysoline
trimethadione	Trimedone

Anticonvulsant drugs are used to treat, prevent or reduce the frequency or severity of seizures caused by:

1. Epilepsy.
2. Drugs.
3. Hypoglycemia.

LEARNING ACTIVITIES - continued

4. Hypomagnesemia.
5. Eclampsia.
6. Meningitis.
7. Encephalitis.
8. Alcohol withdrawl.
9. Head trauma.

Major Uses

1. Treatment, prevention, reduction in number of epileptic or nonepileptic seizures.
2. Treatment of status epilepticus.

Side Effects

Vary from drug to drug, but include:

1. Drowsiness.
2. Blood dyscrasias.
3. Mental dullness to confusion.
4. Rash.
5. Urticaria.

Nursing Considerations

1. To discontinue these drugs suddenly may trigger status epilepticus.
2. Patients should be warned not to drive or engage in dangerous activities until the drug response has been determined.
3. Use of Dilantin may turn the urine pink or brown.
4. With use of Dilantin, gingival hyperplasia can develop, most commonly in children and adolescents. This condition can be minimized by:
    a. Daily brushing with multifacted soft toothbrush.
    b. Careful flossing to remove dental plaque.
    c. Gum massage.

LEARNING ACTIVITIES - continued

5. Patient discharge teaching should include:

   a. The reason for taking the medication.

   b. The importance of taking the drug as ordered.

   c. Adverse reactions.

   d. What to do in the event of a seizure.

   e. The importance of avoiding colds and infections and notifying the doctor if they do occur.

   f. The importance of regularity and moderation in life style.

   g. The importance of a well-balanced diet with avoidance of overeating or overhydration.

   h. The avoidance of over-the-counter drugs.

   i. Alcohol restriction according to the physician's recommendation.

   j. The importance of moderation in physical activity and the avoidance of high risk sports.

   k. The importance of avoiding emotional stress and having someone with whom the patient may talk.

   l. The importance of keeping followup appointments.

   m. The improtance of carrying an ID card or jewelry with pertinent medical information.

ACTIVITY #10. General Anesthetics

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*ether	
*fentanyl citrate with droperidol	Innovar (schedule II)
halothane	Fluothane
ketamine HCL	Ketalar
methohexital sodium	Brevital Sodium (schedule IV)
*nitrous oxide (laughing gas)	
thiamylal sodium	Surital (schedule III)
thiopental sodium	Pentothal Sodium (schedule III)

LEARNING ACTIVITIES - continued

More than a hundred years ago the first volatile anesthetics were used to produce relief of pain and unconsciousness during a surgical operation. Prior to that, agents used to relieve pain were limited to alcoholic beverages and opium. General anesthetic agents are capable of producing stupor or loss of consciousness and a general loss of sensation. This is preceded by analgesia and accompanied by varying degrees of muscular relaxation.

General anesthetics may be inhalation or volatile anesthetics, which are gases or liquids that can be administered by inhalation when mixed with oxygen, or they may be intravenous or nonvolatile anesthetics (also called basal anesthetics), which include organic solids or liquids that are water soluble and are given by IV, IM or rectal instillation.

Major Uses

1. IV anesthesia usually is used for brief procedures or as an introduction to gaseous procedures.

2. For basal anesthesia in children.

3. Gaseous anesthesia (a mixture of gas and oxygen) is often used for longer procedures.

Side Effects

Included are:

1. Postoperative drowsiness

2. Delirium and hallucination

3. Hypotension

4. Blurred vision

Nursing Considerations

1. Patient's pulse, respiration and blood pressure should be monitored before, during and after administration of anesthesia. Resuscitation drugs and equipment should be available.

2. When Innovar is given, and narcotic analgesics are required postoperatively, their dosage should be reduced initially to as little as one-fourth to one-third of the usual recommended dose.

3. The patient's general response to an anesthetic is caused by the functioning of the nervous system instead of the nature of the anesthetic. In other words, two patients may react to the same anesthetic in very different ways depending upon weight, age, sex and idiosyncrasies.

4. Preanesthetic medications are adminstered for:

    a. Sedative and amnesic effects (barbituates and narcotic analgesics).

LEARNING ACTIVITIES - continued

b. Inhibition of salivary and mucous secretion (atropine and Anectine). Barbituates may be administered the night before to ensure a sound and restful sleep. Narcotics, barbituates or tranquilizers administered prior to the patient's being taken to the OR promote serenity, amnesia and smooth induction.

5. Preop meds must be given as ordered, since a narcotic given too close to the time of administration of a general anesthetic may achieve its full effect during anesthesia and cause severe respiratory depression.

6. Stages of general anesthesia

Stage One - Analgesia. This stage begins with onset of anesthetic administration and lasts until loss of consciousness.

Stage Two - Excitement: This stage varies greatly with individuals but begins with the loss of consciousness. Reflexes are present. The patient may struggle, shout, swear or sing. There is an increase in autonomic activity, muscle tone, eye movement and rapid and irregular breathing.

Stage One and Two are the stages of induction.

Stage Three - Surgical anesthesia: This stage is divided into four planes of increasing depth of anesthesia. The planes are determined by:

a. Character of respiration

b. Eye movement

c. Pupil size and reflexes

Most operations are done in Stage Two or the upper planes of Stage Three.

Stage Four - Medullary Paralysis: This stage is toxic and is characterized by respiratory arrest and vasomotor collapse.

ACTIVITY #11. Local Anesthetics

__Directions:__ Read the following.

GENERIC NAMES	TRADE NAMES
*bupivacaine	Marcaine
*dibucaine	Nupercaine
*lidocaine HCL	Xylocaine HCL
mepivacaine	Carbocaine, Isocaine
piperocaine HCL	Metycaine

LEARNING ACTIVITIES - continued

GENERIC NAMES	TRADE NAMES
*procaine HCL	Novocain
*tetracaine HCL	Pontocaine

Local anesthetics cause temporary loss of feeling and motor activity by diffusing through the tissue that surrounds the nerve cells membrane, penetrating into the nerve cell and blocking nerve impulse. These agents usually end in "caine" as in xylocaine. Dosage varies according to individual response, procedure to be performed and vascularity of the tissue.

Major Uses

1. Surface or topical anesthesia is restricted to mucous membranes, damaged skin surfaces, wounds or burns. It is applied as a solution, ointment, cream or powder and does not penetrate unbroken skin.

2. Infiltration anesthesia is produced by injecting diluted solutions (0.1%) of the agent into the skin and then subcutaneously into the region to be anesthetized. Epinephrine may be added to the solution to intensify the anesthesia and prevent excessive bleeding and systemic effect. This is used for minor surgeries, such as:

    a. Incision and drainage of an area.

    b. Dental work.

3. Conduction of block anesthesia. Anesthetic is injected into the vicinity of a nerve trunk that supplies the region of the operative site. A more concentrated solution is required (2%).

4. Spinal anesthesia is a type of extensive nerve block. The anesthetic solution is injected into the subarachnoid space. It affects the lower part of the spinal cord and nerve roots.

Side Effects

1. Respiratory arrest

2. Nausea with some agents

3. Vomiting

4. Headache

Nursing Considerations

1. Resuscitative equipment and drugs should be available.

2. Oral topical anesthetics may interfere with swallowing. Food should not be ingested within 60 minutes following drug application, especially in pediatric, elderly or debilitated patients.

LEARNING ACTIVITIES - continued

ACTIVITY #12. Cholinergics (Parasympathomimetics)

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*bethanechol chloride	Urecholine, etc.
*edrophonium chloride	Tensilon
neostigmine bromide	Prostigmin Bromide
*neostigmine methylsulfate	Prostigmin
physostigmine salicylate	Antilirium
*pyridostigmine bromide	Mestinon

The classification of autonomic nerves presently in widespread use is based on the type of chemical mediator responsible for nerve impluse transmission. Those nerve fibers that synthesize and liberate acetylcholine are known as cholinergic fibers; those that synthesize and secrete norepinephrine (noradrenaline) are called adrenergic fibers. Drugs that bring about effects in the body similar to those produced by acetylcholine are called cholinergic drugs.

Acetylcholine has two major actions on the nervous system:

1. It has a stimulant effect on the ganglia, adrenal medulla and skeletal muscles. This effect is referred to as "the nicotinic action of acetylcholine."

2. It has stimulant effects at the postganglionic nerve endings in cardiac muscle, smooth muscle and glands. This is referred to as the "muscarinic action" of acetylcholine. Therapeutic effectiveness of cholinergic drugs depends primarily on their muscarinic action, though some of them possess nicotinic action. The following chart will help you understand the difference between muscarinic action and nicotinic action.

	MUSCARINIC EFFECTS	NICOTINIC EFFECTS	
CARDIOVASCULAR			
Blood vessels	Dilation	Constriction	With large doses after atropine
Heart rate	Slowed	Increased	
Blood Pressure	Decreased	Increased	
GI			
Tone	Increased	Increased	
Motility	Increased	Increased	
Sphincter	Relaxed	---	
GLANDULAR SECRETIONS	Increased salivary, lacrimal and intestinal and sweat secretions	Initial stimulation then inhibition of salivary and bronchial secretions	
SKELETAL MUSCLE	---	Stimulated	
AUTONOMIC GANGLIA	---	Stimulated	
EYE	Pupil Constriction Decreased Accommodation	---	
BLOCKING AGENT	Atropine	Tubocurarine	
REMARKS	Effects increase as dose increased	Increased dose inhibits effects and causes receptor blockage	

LEARNING ACTIVITIES - continued

Cholinergic fibers are widespread; they are present in the heart, colon, spleen, vas deferens, uterus and the vessels of the skin and muscles.

Major Uses

1. To treat and diagnose myasthenia gravis.
2. To prevent and to treat postop abdominal distention and megacolon.
3. To reverse the effect of neuromuscular blocking agents (muscle relaxants) used in surgical procedures.
4. As an antidote in anticholinergic (such as tricylic drugs) poisoning (Antilirium).
5. To treat postoperative urinary retention and neurogenic bladder.
6. To treat paroxysmal atrial tachycardia (Tensilon).

Mechanism of Action

These drugs stimulate or increase the effect of acetylcholine, which serves as the neurotransmitter for impulses in the parasympathetic nervous system. In this way, parasympathomimetic drugs mimic the effect of acetylcholine on the parasympathetic system.

Side Effects

1. Bradycardia
2. Hypotension
3. Miosis
4. Abdominal cramps
5. Nausea
6. Vomiting
7. Bronchoconstriction

Nursing Considerations

1. Explain to the patient taking Prostigmin or Mytelase for myasthenia gravis that the drug will relieve symptoms of:
    a. Lid drooping.
    b. Double vision.

LEARNING ACTIVITIES - continued

   c. Difficulty in chewing and swallowing.

   d. Trunk and limb weakness.

   Stress the importance of taking this drug as ordered. Patients will have to take this medication the remainder of their lives.

2. When giving Urecholine, NEVER give IV or IM as it could cause:

   a. Circulatory collapse.

   b. Hypotension.

   c. Severe abdominal cramping.

   d. Bloody diarrhea.

   e. Shock.

   f. Cardiac arrest.

3. Monitor and document vital signs frequently, especially respirations. Atropine 0.5 mg -1 mg should be on hand for emergency IV use.

ACTIVITY #13. Anticholinergics (Parasympatholytics)

__Directions:__ Read the following.

GENERIC NAMES	TRADE NAMES
*atropine sulfate	
*benztropine mesylate	Congentin
*glycopyrrolate	Robinul, Robinul Forte
*scopolamine hydrobromide	
trihexyphenidyl hydrochloride	Artane, Trihexy, etc.

Anticholinergic drugs act selectively on postganglionic sites to block the muscarinic effects of acetylcholine. These agents relax smooth muscle, inhibit secretions of duct glands and dilate the pupils. In toxic doses they will produce skeletal muscle paralysis. Anticholineric drugs may be obtained from natural sources or produced synthetically. The synthetic drugs tend to have fewer side effects.

Major Uses

1. To reduce normal body secretions, for example:

   a. Gastric acid.

   b. Salivation.

LEARNING ACTIVITIES - continued

    c. Perspiration.
    d. Bronchial mucous.
2. To reduce spasm or smooth muscle contraction of the:
    a. GI tract.
    b. Bladder.
    c. Respiratory tract.
3. To treat:
    a. Parkinsonism.
    b. Paralysis agitans.

Side Effects

Vary from drug to drug but may include:

1. Disorientation.
2. Restlessness.
3. Drowsiness.
4. Dizziness.
5. Hallucinations.
6. Mouth dryness.
7. Constipation.
8. Nausea.
9. Urinary hesitancy.

Nursing Considerations

1. These drugs are contraindicated in glaucoma.
2. Relieve dry mouth by giving patient:
    a. Cool drinks.
    b. Ice chips.

LEARNING ACTIVITIES - continued

c. Sugarless chewing gum.

d. Hard candy, as permitted.

3. To prevent gastric irritation, administer drugs with meals.

4. Warn the patient using medications that cause drowsiness or dizziness not to drive or perform potentially hazardous tasks until the particular response to the drug is known.

5. For medications causing urinary retention, have the patient void before administering. Monitor I & O.

6. Use scopolamine and atropine with caution in hot and humid climates as drug-induced heat stroke could develop.

ACTIVITY #14. Adrenergics (Sympathomimetics)

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*dopamine hydrochloride	Intropin
*ephedrine sulfate	Slo-Fedrin, etc.
epinephrine	Inhalants-Primatene Mist, etc.
epinephrine bitartate	Inhalants-Medihaler-Epi, etc.
*epinephrine hydrochloride	Adrenaline Chloride, Sus-Phrine, etc.
ethylnorepinephrine hydrochloride	Bronkephrine
*isoproterenol hydrochloride	Isuprel, etc.
isoproterenol sulfate	ISO Autohaler, etc.
*levarterenol bitartrate (norpinephrine, noradrenaline)	Levophed
mephentermine sulfate	Wyamine
*Metaproterenol sulfate	Alupent, Metaprel
metaraminol bitartrate	Aramine
methoxamine hydrochloride	Vasoxyl
methoxyphenamine hydrochloride	Orthoxine Hydrochloride
*phenylephrine hydrochloride	Neo-Synephrine
protokylol hydrochloride	Ventaire
pseudoephedrine hydrochloride	Novafed, Sudafed, etc.
*terbutaline sulfate	Brethine, Bricanyl

The sympathetic nervous system regulates the body's expenditure of energy, especially in times of stress. In doing so it innervates a wide variety of body organs and systems.

Example:

1. Eyes

2. Sweat and salivary glands

LEARNING ACTIVITIES - continued

3. Heart
4. Respiratory tract
5. Stomach
6. Liver
7. Bladder
8. Intestines

Drugs that produce effects like those produced by the adrenergic mediator norepinephrine (noradrenaline) are called adrenergic drugs or sympathomimetics.

Major Uses

1. To improve blood pressure and cardiac output in severely decompensated states such as cardiogenic shock.
2. To treat:
    a. Heart block.
    b. Certain arrhythmias.
    c. Paroxysmal atrial tachycardia.
    d. Cardiac arrest.
3. To relieve bronchoconstriction.
4. These drugs are used to:
    a. Treat anaphylaxis and other allergic reactions.
    b. Relieve ophthalmic congestion.
    c. Control local hemorrhage.
    d. Delay delivery in premature labor.

These drugs operate by stimulating or increasing the effect of epinephrine and norepinephrine within the sympathetic nervous system. Effects vary and include:

a. Bronchodilation.
b. Release of glucose from the liver.
c. Increased heart rate.

LEARNING ACTIVITIES - continued

d. Increased contractility of the ventricles.

e. CNS excitation.

f. Dilation of blood vessels in skeletal muscles.

g. Constriction of blood vessels in cutaneous areas.

Side Effects

These vary from drug to drug, but may include:

1. Headache.
2. Tachycardia.
3. Nausea and vomiting.
4. Cardiac arrhythmias.
5. Nervousness.
6. Tremor.
7. Hypertension and/or hypotension.

Nursing Considerations

1. With Intropin, Isuprel, Levophed and Aramine:
    a. Blood pressure
    b. Pulse rate
    c. Urinary output
    d. Extremity color and temperature

    Must be frequently monitored

2. With Intropine, Levophed, Aramine:
    a. The IV site should be watched closely for signs of infiltration. If this does occur, NOTIFY THE NURSE IN CHARGE STAT.

3. With usage of Ephedrine
    a. Give this drug within 2 hours of bedtime to prevent insomnia.

4. Epinephrine is the drug of choice in emergency treatment of acute anaphylactic reactions. After administering this drug, massage the injection site to counteract vasoconstriction that may occur. Repeated injection can cause necrosis at the site of injection due to vasoconstriction. Avoid IM injection of the oil preparation into the buttocks as gas gangrene may occur.

LEARNING ACTIVITIES - continued

ACTIVITY #15. Adrenergic Blocking Agents (Sympatholytics)

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
dihydroergotamine mesylate	D.H.E. 45
*ergotamine tartrate	Ergotamine, Ergostat, etc.
methysergide maleate	Sansert
*phenoxybenzamine hydrochloride	Dibenzyline
phentolamine mesylate or hydrochloride	Regitine

Adrenergic blocking agents inhibit or decrease the effects of epinephrine and norepinephrine released from sympathetic nerve endings.

Major Uses

1. Temporary treatment of hypertension caused by pheochromocytoma.
2. Symptomatic treatment of spastic peripheral vascular disease.
3. Prophylaxis and treatment of vascular headaches.

Mechanism of Action

These drugs act by blocking the effects of epinephrine and norepinephrine and other sympathomimetics on smooth muscle and on exocrine glands, thereby preventing sympathetic stimulation.

Side Effects

Vary from agent to agent, but may include:

1. Nausea and vomiting.
2. Nasal congestion.
3. Tachycardia.
4. Postural hypotension.

Nursing Considerations

1. When using D.H.E. 45 and Ergostat, provide a quiet, low-light atmosphere to help further relax patients who have used these medications to relieve migraine headache.

LEARNING ACTIVITIES - continued

ACTIVITY #16. Review Exercises

Directions: Answer the following questions. Answers can be found by reviewing the information in this module and using the PDR.

1. Analgesics (nonnarcotic) may have three different properties or uses. They are:

   a. ____________________

   b. ____________________

   c. ____________________

2. Sarah was placed on Pyridium 200 mg yesterday for a chronic UTI. You find her in the restroom in tears because her urine is a brownish-orange color. What will you do?

3. What side effects may be seen from using ASA?

4. What is meant by "Schedule I Drugs," "Schedule V Drugs"?

5. It is 0925 and you have just finished preparing your 0900 meds. Henry is complaining of incisional discomfort (he had his surgery 3 days ago) and requesting something for relief. What is your priority and why?

LEARNING ACTIVITIES - continued

6. How much codeine does each of the following drugs contain?

   a. Fiorinal #2 ____________________

   b. Tylenol #4 ____________________

   c. Phenaphen #3 ____________________

7. In a patient who returned from recovery room two hours ago and has had nothing for relief of pain, what criteria will you use to mediate with or withold morphine?

   ____

   ____

8. The narcotic antagonist of choice for respiratory depression of unknown cause is:

   ____

9. The difference between a sedative and hypnotic is:

   ____

   ____

10. Kareen Karoon is 75 years old and has just received Dalmane 15 mg. What precautions should you take for her safety and comfort?

    ____

    ____

    ____

    ____

11. How can you promote good sleep without resorting to sedative/hypnotics?

    ____

    ____

12. At 1100 Jeffry Livingston asks for Placidyl and to have his door closed. How will you respond to this?

    ____

    ____

    ____

    ____

LEARNING ACTIVITIES - continued

13. Drugs used to decrease anxiety and yet not produce sleep are:

14. Two different types of antidepressants are:
    a.
    b.

15. Neuroleptic drugs are used:

16. Name five uses for cerebral stimulants.
    a.
    b.
    c.
    d.
    e.

17. Gingival hyperplasia is a side effect seen with which anticonvulsant?

18. General anesthetics are of two types. These are:
    a.
    b.

19. Preoperatively, Janna Jensen will receive Demerol 50 mg, Vistaril 50 mg, Atropine 0.4 mg IM. What will each of these drugs do?

LEARNING ACTIVITIES - continued

20. Indicate usual dosages and patient teaching for the following medications.

    a. Aspirin: ____________________

    ____

    ____

    b. Demerol: ____________________

    ____

    ____

    c. Chloral Hydrate: ____________________

    ____

    ____

    d. Equanil: ____________________

    ____

    ____

    e. Marplan: ____________________

    ____

    ____

    f. Thorazine: ____________________

    ____

    ____

    g. Ritalin: ____________________

    ____

    ____

    h. Dilantin: ____________________

    ____

    ____

LEARNING ACTIVITIES - continued

i. Novocain: ____________________

21. What nursing considerations are important in the administration of Innovar?

22. Name five uses for cholinergic drugs.

    a. ____________________
    b. ____________________
    c. ____________________
    d. ____________________
    e. ____________________

23. Atropine is contraindicated in: ____________________

24. The sympathetic nervous system is responsible for regulating:

25. Name three drugs that require continual patient monitoring so that the correct dosage is received.

    a. ____________________
    b. ____________________
    c. ____________________

LEARNING ACTIVITIES - continued

26. Indicate usual dosage, routes and nursing considerations for the following.

    a. Urecholine: ________________ ________________

    ____

    b. Prostigmin: ________________ ________________

    ____

    c. Atropine Sulfate: ________________ ________________

    ____

    d. Robinul: ________________ ________________

    ____

    e. Dopamine: ________________ ________________

    ____

    f. Brethine: ________________ ________________

    ____

    g. Dibenzyline: ________________ ________________

    ____

ACTIVITY #17. How Calculating Are You?

Directions: Complete the following problems, showing your work, and turn in to your instructor at the beginning of the lecture "Drugs Used in the Treatment of Disorders Involving the Nervous System."

1. 0.5 X 6 =
2. 2.5$\overline{)1}$
3. 0.3$\overline{)0.24}$
4. 1 gram = _____grains
5. Pavabid 150 mg = _____grams = _____grains
6. Kaon 15 cc = _____℥ = _____ʒ = _____tsp.
7. Tylenol grain V = _____mg = _____grams

LEARNING ACTIVITIES - concluded

8. Vitamin B 12: 1 cc = _____ʒ

9. IV - 250 cc to infuse in over 10 hours. The drip chamber delivers 10 gtts per cc
_____cc/hr. _____gtts/min.

10. On hand - 2 grains in 1 cc
Ordered: 15 grains

11. Dose ordered: grains 1/16
On hand - grains 1/10 in 1 cc

12. Dose ordered: 1 gram
On hand - 500 mg tablets

13. Dose ordered: 1.5 grams
On hand - 5 grams in 8 cc

14. Dose ordered; 1500 mg
On hand - 0.3 grams tablets

15. Dose ordered: 500 mg
On hand - 8 grams in 10 cc

PHARMACOLOGY

Module I, Part II - Medications Used in the Treatment of Disorders of the Ear and Eye

RATIONALE

In order to provide optimal nursing care you must understand how to prepare and administer medications to a patient with a disorder related to the ear or eye and you must understand how these medications can affect the patient.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the classifications of drugs commonly used in the treatment of ear and eye disorders.
2. Identify side effects of drugs commonly used in the treatment of ear and eye disorders.
3. Identify nursing considerations that relate to the administration of drugs used in the treatment of ear and eye disorders.
4. Identify major uses for selected drugs in the treatment of ear and eye disorders.
5. Be able to calculate and convert dosages for drug administration.
6. Demonstrate setup and administration of medications in the treatment of disorders of the ear and eye when given an assignment in the clinical area.

LEARNING ACTIVITIES

Directions: All of the information needed to complete Module I and to pass the test is included in this module and the PDR (Physician's Desk Reference). Exercises have been designed to help you learn the material and to focus on areas not specifically included (such as recommended dosages for individual drugs).

Since so many medications are included in this module, an effort has been made to simplify your study for the test by placing a star next to the more common drugs that may be included on the test.

You will better understand these drugs if you first complete Module 17-I, "Nursing Care of Patients with Diseases of the Ear and Eye."

Remember: Much of the information relating to these drugs is generalized and based upon the classification of the drug. Therefore, before giving a drug, LOOK UP EACH DRUG for its specific side effects, nursing consideration, actions, uses and dosages.

LEARNING ACTIVITIES - continued

ACTIVITY #1. Artificial Tears and Eye Irrigants

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*artificial tears	Isopto Tears, Liquifilm Tears Tearisol, etc.
*eye irrigants	Collyrium Eye Lotion, Murine, etc.

Artificial tears and external eye irrigation solutions are applied topically. Many are available without a prescription.

Major Uses

1. Artificial tears provide lubrication, remove debris and protect against infection when normal tear production is insufficient.
2. External eye irrigation solutions are sterile isotonic preparations used for:
   a. Irrigating the eye following tonometry.
   b. Gonioscopy.
   c. Fluorescein dye examinations.
   d. Removing foreign bodies.
   e. Soothing minor eye irritation.
   f. Irrigating the eye in large quantities for caustic chemical injury and trauma.

Mechanism of Action

1. Artificial tears augment insufficient tear production.
2. External irrigation solutions cleanse the eye.

Side Effect

1. Discomfort (burning upon instillation)

Nursing Considerations

1. Instruct the patient that the product should be used by one person only.
2. How to irritate the eye: (See Diagram I)
   a. Be sure to wash your hands before instilling the eye irrigation.

LEARNING ACTIVITIES - continued

b. Have the patient lie with head tilted toward the affected side.

c. The irrigating solution will then flow from the inner canthus of the affected eye toward the outer canthus.

d. Place a curved basin at the cheek on the side of the affected eye to catch the solution.

e. Use gentle force to remove secretions.

f. Do not touch any part of the eye with the irrigating tip.

g. After irrigation, have the patient close the eyes and wipe away the excess from the lid and lashes.

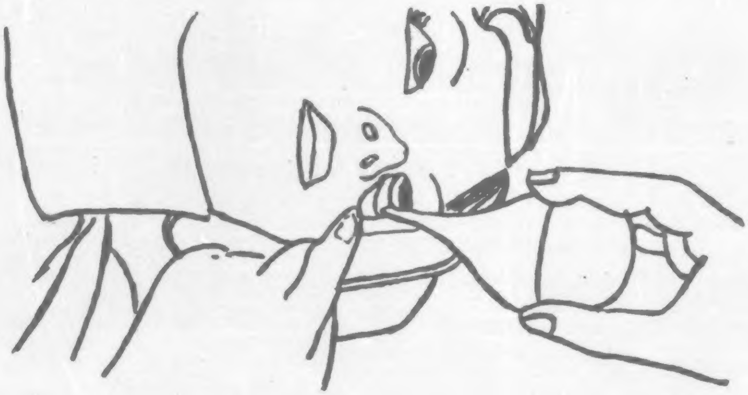


Diagram I

ACTIVITY #2. Ophthalmic Anti-Infectives

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
bacitracin	Baciquent Ophthalmic Ointment
*benzalkonium chloride	Zephiran
*boric acid	Collyrium
chloramphenicol	Chloromycetin Ophthalmic Chloroptic
*chlortetracycline HCL	Aureomycin Ophthalmic
erythromycin	Ilotycin Ophthalmic
gentamicin sulfate	Garamycin Ophthalmic
*idoxuridine (IDU)	Dendrid, Stoxil
neomycin sulfate	Myciquent Ophthalmic
polymyxin B sulfate	Aerosporin
*silver nitrate 1%	

LEARNING ACTIVITIES - continued

GENERIC NAMES	TRADE NAMES
sulfacetamide sodium	Cetamide Opthalmic, etc.
tetracycline HCL	Achromycin Ophthalmic
*vidarabine	Vira-A Ophthalmic

Ophthalmic anti-infectives have antibacterial, antiviral or antifungal activity. The majority of the anti-infectives are antibiotics, but others, such as boric acid or Zephiran, have weak bacteriostatic or germicidal effects. Sulfacetamide sodium is also an anti-infective, but the antibiotics have replaced it except for use with minor infections. Vira-A and Dendrid are specific antiviral agents. Ophthalmic anti-infectives are available in solutions, suspensions or as ointments. They are also available in combinations with other ophthalmic drugs, especially corticosteroids.

Major Uses

1. Treatment of surface bacterial infections involving the conjunctiva or cornea with organisms such as:
    a. Chlamydia trachomatis.
    b. Pseudomonas.
    c. Staphylococcus.
2. Treatment of acute keratoconjunctivitis or recurrent epithelial keratitis caused by herpes simplex, types I and II (Vira-A and Dendrid).
3. Silver nitrate is used to prevent gonorrheal ophthalmia neonatorum.
4. Boric acid is a bacteriostatic and fungistatic irrigation solution.
5. Zephiran is a weak germicide used as a wetting solution, a preservative and facilitator of transcorneal penetration of other ophthalmic drugs.

Mechanisms of Action

1. Antibiotics inhibit bacterial protein synthesis in susceptible microorganisms.
2. Zephiran is a bacteriostatic, surface-active agent that increases corneal permeability enabling greater drug penetration.
3. Silver nitrate causes protein destruction that prevents gonorrheal ophthalmia neonatorum.

Side Effects

Vary from agent to agent, but include:

1. Overgrowth of nonsusceptible organisms with long-term use.

LEARNING ACTIVITIES - continued

2. Temporary visual haze.
3. Burning or stinging after instillation.

Nursing Considerations

1. These drugs are contraindicated if the patient has an allergy to the antibiotic.
2. Advise the patient that ointments temporarily blur vision.
3. If the patient has a bacterial, fungal or viral infection, stress the importance of not sharing facial washcloths, pillows, etc. with others.
4. The patient should be aware of early signs of sensitivity such as itching of the lids or continual burning. If this happens, the drug should be stopped and the physician notified.
5. Boric acid can be toxic if absorbed from abraded skin areas, granulating wounds or if ingested.
6. Aureomycin should not be used if outdated because the drug breaks down to a toxic substance with age and may cause nephrotoxicity if systemically absorbed.
7. Silver nitrate 1% is legally required for neonates in most states.

ACTIVITY #3. Ophthalmic Anti-Inflammatory Agents

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
dexamethasone	Maxidex Ophthalmic Suspension
*dexamethasone sodium phosphate	Decadron Phosphate Ophthalmic
*fluorometholone	FML Liquifilm Ophthalmic
hydrocortisone	Optef
*hydrocortisone acetate	Cortamed, Hydrocortone
*medrysone	HMS Liquifilm Ophthalmic
prednisolone acetate	Econopred Ophthalmic, Prednicon, etc.
*Prednisolone sodium phosphate	Nova-Pred Forte, etc.

All of the above ophthalmic agents contain corticosteroids. Corticosteroids are used topically in the eye to treat inflammatory ophthalmic conditions. They are strong drugs, however, and should only be used with medical supervsion.

Major Uses

1. Treatment of inflammatory disorders of the:
   a. Eyelids.

LEARNING ACTIVITIES - continued

   b. Conjunctiva.

   c. Cornea.

2. Decadron Phosphate is also used to prevent corneal scarring.

Side Effects

1. Increased intraocular pressure.

2. Increased susceptibility to viral or fungal corneal infection.

Nursing Consideration

Advise the patient to consult the physician promptly and to interrupt treatment with ophthalmic preparation if change in visual acuity or diminished visual fields occurs.

ACTIVITY #4. Miotics

__Directions:__ Read the following.

GENERIC NAMES	TRADE NAMES
acetylcholine chloride	Miochol
*carbachol (intraocular)	
(topical)	
demecarium bromide	Humorsol
echothiophate iodide	Echodide, Phospholine Iodide
isoflurophate	Floropryl
*physostigmine salicylate	Isopto Eserine
*pilocarpine hydrochloride	Isopto Carpine, etc.
pilocarpine nitrate	P.V. Carpine Liquifilm

Miotics cause pupillary constriction (miosis), which increases secretion of tears and decreases ocular tension. These drugs are used in chronic conditions such as glaucoma and during or after ocular surgery.

Major Uses

1. Treatment of glaucoma:

   a. Open-angle

   b. Acute-angle closure

2. Treatment of accomodative esotropia (deviation of the visual axis of one eye toward that of the other eye, "cross-eye.")

3. In iridectomy, anterior segment surgery and other ocular surgery.

4. Prevents adhesions after ocular surgery when used with mydriatics.

LEARNING ACTIVITIES - continued

Side Effects

1. Eye and brow pain
2. Headache
3. Blurred vision
4. Ciliary or accomodative spasm locally (with some of the medication systemic side effects may be seen)

Nursing Considerations

1. Because these drugs cause blurred vision and difficulty in focusing, caution the patient to avoid hazardous activities such as driving a car or operating machinery until vision clears.

2. The patient with glaucoma needs to be advised that therapy is long-term and eyedrops must be used as prescribed. To do otherwise may result in blindness caused by glaucoma.

3. Advise the patient to apply gentle pressure to the nasolacrimal canal for one to two minutes following instillation to prevent access of the drug to the nasal mucosa and general circulation.

4. The patient should be advised that brow pain and myopia tend to be more prominent in younger patients and generally disappear with continued use of the drug.

5. How to instill eye ointment: (See Diagram II)

   a. First cleanse the patient's eyelid and lashes with saline or an irrigating solution.

   b. Remove the cap from the ointment tube, making sure you don't contaminate the applicator end by touching it against anything.

   c. Instill the ointment as you would eyedrops, squeezing a small ribbon of medication along the inside of the lower eyelid. (It need not run the entire length of the eyelid since normal blinking will spread a small amount evenly over the surface of the eye.)

   d. Release the eyelid.

   e. Gently remove excess ointment with a clean cotton ball or gauze pad.

LEARNING ACTIVITIES - continued

How to Instill Eye Ointment

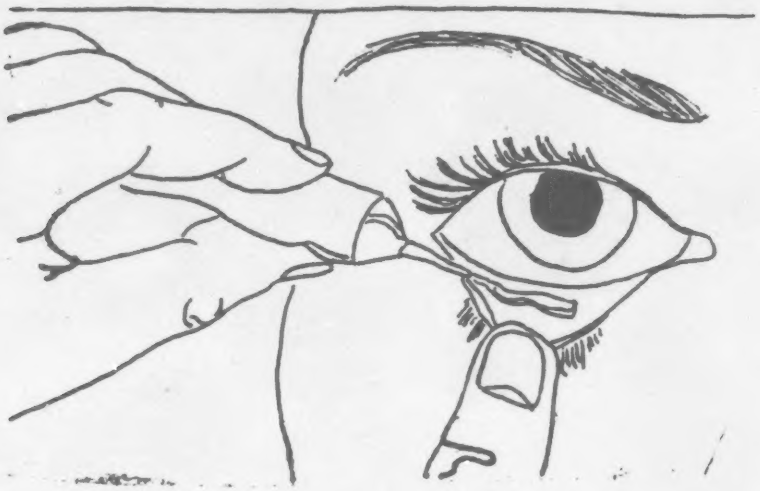


Diagram II

ACTIVITY #5. Mydriatics

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*atropine sulfate	Isopto Atropine
cyclopentolate hydrochloride	Cyclogyl, Mydplegic
epinephrine bitartrate	Lyophrin
*epinephrine hydrochloride	Epifrin, Glaucon
homatropine hydrobromide	Isopto Homatropine
hydroxyamphetamine hydrobromide	Paredrine
*phenylephrine hydrochloride	Neo-Synephrine
*scopolomine hydrobromide	Isopto Hyoscine
tropicamide	Mydriacyl

Mydriasis (dilation of the pupil) and cycloplegia (paralysis of the ciliary muscle) are produced when these drugs are applied topically to the eye.

Major Uses

1. Diagnostic procedures requiring mydriasis or cycloplegia.
2. To dilate the pupil in acute iris inflammation (iritis) or uveal tract inflammation (uveitis).

LEARNING ACTIVITIES - continued

3. Epinephrine is used:
   a. In conjunction with topical miotics to lower intraocular pressure of open-angle glaucoma.
   b. To diagnose episcleritis (inflammtion of the outer layers of the sclera).
   c. To control local bleeding in eye surgery.

Side Effects

1. Increased intraocular pressure
2. Blurred vision
3. Photophobia
4. Contact dermatitis
5. With some of these drugs, systemic reactions may occur such as:
   a. Flushing.
   b. Tachycardia.
   c. Hallucination.
   d. Irritability.
   e. Ataxia.

Nursing Considerations

1. These drugs are contraindicated in glaucoma (except epinephrine as indicated above).
2. Photophobia may diappear as early as two hours after application, but while it exists, the patient should avoid potentially hazardous activities such as driving a car and should also be advised to wear dark glasses.
3. The possibility of systemic absorption may be minimized by applying pressure against the lacrimal sac during and for one or two minutes following instillation.
4. Instilling eyedrops: (See Diagram III)
   a. Before instilling eyedrops, first check to be sure you have the correct:
      (1) Patient.
      (2) Eye.
      (3) Medication.

LEARNING ACTIVITIES - continued

b. Any error can be extremely serious.

c. Be sure to wash your hands.

d. Have the patient tilt the head back.

e. Holding the eyedropper or squeeze bottle in one hand and pull down the patient's lower eyelid with your other hand to form a small pocket with the lid.

f. Tell the patient to look up, then being careful not to touch the dropper to the eye, squeeze a single drop of medication onto the lining of the lid.

g. Do not place drops on the cornea since it is highly sensitive to foreign matter.

h. Release the patient's eyelid.

i. Tell the patient to close the eye slowly to avoid expelling the medication. (If the dosage calls for more than one drop, let the patient blink back the first drop before instilling the second.)

j. The patient should not rub the eye but should gently blot away excess fluid with a tissue or cotton ball. This is particularly important with potent medications such as atropine, which could be toxic to the patient's system. Blotting will prevent the medication from draining down the tear duct into the nose and stomach.

k. Instruct children who struggle when receiving eyedrops:

    (1) To tilt their head back.

    (2) To close their eyes gently.

    (3) Then squeeze a drop of medication onto the inner canthus of the affected eye.

    (4) When the eye opens, the drop will roll in.

LEARNING ACTIVITIES - continued

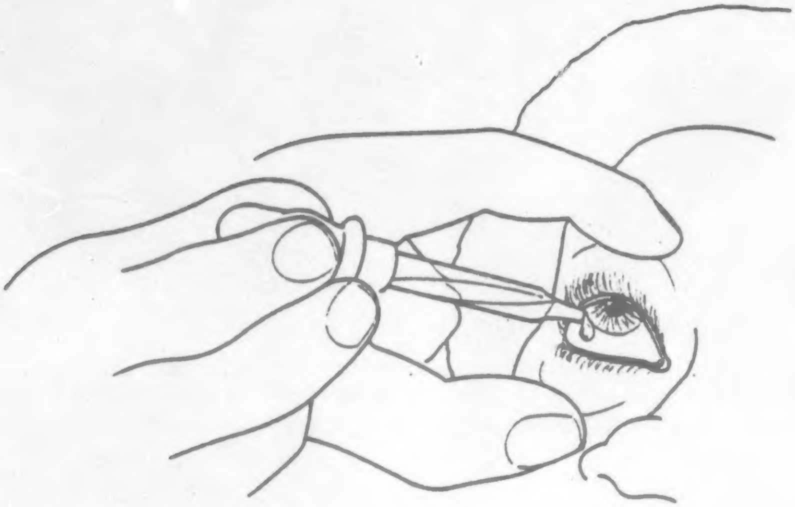


Diagram III

ACTIVITY #6. Ophthalmic Vasoconstrictors

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*epinephrine hydrochloride	Adrenalin Chloride 0.1%
naphazoline hydrochloride	Albalon Liquifilm Ophthalmic, Clear Eyes, etc.
phenylephrine hydrochloride	Prefrin, Isopto Frin, etc.
*tetrahydrozoline hydrochloride	Murine 2, Visine, etc.
zinc sulfate	Bufopto Zinc Sulfate, etc.

Ophthalmic vasoconstrictors relieve the itching and reduce the redness associated with irritations and inflammations of the eye. They are available in eyedrop form and many are available without a prescription.

Major Uses

1. Treatment of:
    a. Ocular congestion
    b. Irritation
    c. Itching

LEARNING ACTIVITIES - continued

Side Effects

1. Transient stinging
2. Blurred vision, pupillary dilation
3. Increased intraocular pressure
4. Headache
5. Browache
6. Pupillary dilation

Nursing Consideration

Contraindicated in patients with glaucoma.

ACTIVITY #7. Topical Ophthalmic Anesthetics

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
benoxinate hydrochloride	Dorsacaine
cocaine hydrochloride	
proparacaine hydrochloride	Ophthaine, etc.
*tetracaine hydrochloride	Pontocaine

Topical ophthalmic anesthetics are used for a variety of diagnostic and minor surgical procedures. They are not for self-medication and should not be used unless under a doctor's supervision.

Major Uses

1. Anesthesia:
   a. Tonometry (measure of tension or pressure)
   b. Gonioscopy (examination of the angle of the anterior chamber of the eye)
   c. Suture removal from the cornea
   d. Removal of corneal foreign bodies
   e. Other diagnostic or minor surgical procedures
2. Cocaine hydrochloride is also used to diagnose Horner's syndrome.

LEARNING ACTIVITIES - continued

Mechanisms of Actions

1. Topical ophthalmic anesthetics produce anesthesia by preventing initiation and transmission of nerve impulses at the cell membrane.
2. Cocaine hydrochloride also exerts an adrenergic affect that produces mydriasis and constriction of conjunctival vessels.

Side Effects

Vary from agent to agent, but may include:

1. Irritation
2. Stinging
3. Hypersensitivity

Nursing Consideration

The patient should be instructed not to rub or touch the eye while the cornea is anesthetized, as corneal abrasion may occur.

How to Protect the Anesthetized Eye

1. After applying topical ophthalmic anesthetics, be sure to protect the patient's eye from further injury from smoke, dust or other irritants by applying an eye pad, an oval layer of absorbent cotton between two layers of gauze. Hold the pad in place with three narrow strips of ordinary transparent tape or non-allergenic plastic adhesive tape.
2. For added protection, you may want to add an eye shield, bent so it rests upon bony prominences of the brow, cheeks and face without touching the underlying dressing. Then tape the shield in place.

ACTIVITY #8. Miscellaneous Ophthalmics

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
alpha-chymotrypsin	Catarase, etc.
fluorescein sodium	Fluorescite, etc.
glycerin anhydrous	Ophthalgan
sodium chloride-hypertonic	Adsorbonac Ophthalmic Solution, etc.
*timolol maleate	Timoptic Solution

These drugs are used for variety of purposes in surgical or diagnostic procedures.

LEARNING ACTIVITIES - continued

Major Uses

1. Fluorescite is a dye or stain used for various diagnostic procedures.
2. Catarase is a fast-acting proteolytic enzyme used to dissolve the fiber system between the ciliary body and the equator of the lens in cataract surgery.
3. Ophthalgan temporarily restores corneal transparency when the cornea is too edematous to permit diagnosis in ophthalmoscopy or gonioscopy.
4. Adsorbonac Opthalmic Solution reduces edema after surgery or trauma.
5. Timoptic reduces intraocular pressure in patients with open-angle glaucoma, ocular hypertension, aphakic glaucoma and secondary glaucoma.

Side Effect

Vary from agent to agent, but may include:

Ocular stinging

ACTIVITY #9. Otics

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
acetic acid	Domeboro Otic, etc.
benzocaine	Tympagesic, etc.
boric acid	Ear Dry, Swim - Ear
carbamide peroxide	Debrox
chloramphenicol	Chloromycetin Otic
colistin B sulfate	Coly-Mycin S Otic
dexamethasone sodium phosphate	Decadron
hydrocortisone	Cortamed
methylprednisolone disodium phosphate	Medrol
neomycin sulfate	Otobiotic
oxytetracycline hydrochloride	Terramycin or Terra-Cortil
polymixin B sulfate	Aerosporin
triethanolamine	Cerumenex

Otic drugs treat infection, inflammation and pain from ear disorders. Most of these drugs act locally and have little systemic absorption; many are a combination of two or more drugs.

Major Uses

1. Treatment of:
    a. Infection

LEARNING ACTIVITIES - continued

- b. Inflammation
- c. Pain of internal or external ear disorders
  - (1) Swimmer's ear
  - (2) Perforation
  - (3) Otitis media
- d. Surgical procedures
  - (1) Myringotomy
  - (2) Mastoidectomy
  - (3) Fenestration

2. Softening of impacted earwax

Mechanisms of Action

1. Anti-infectives inhibit or destroy the bacteria present in the ear canal.
2. Corticosteroids control inflammation.
   - a. Inflammation
   - b. Edema
   - c. Pruritis
3. Local anesthetics produce analgesic effects.
4. Ceruminolytics emulsify and disperse accumlated earwax.

Side Effects

1. Ear irritation
2. Itching
3. Urticaria
4. Overgrowth of nonsusceptible organisms

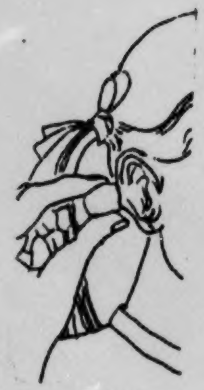
LEARNING ACTIVITIES - continued

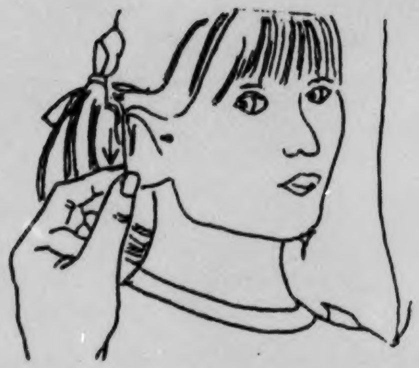
Nursing Considerations

1. Watch for signs of superinfection.
    a. Continued pain
    b. Inflammation
    c. Fever
2. Instillation of eardrops. Delicate ear membranes can be easily damaged by incorrect administration of otic drops. Points to remember include: (See Diagram III)
    a. Explain the procedure to the patient.
    b. Wash your hands.
    c. Read the label carefully to determine the correct temperature for instillation, extremely hot or cold drops may stimulate the CNS. Too hot drops may render the medication ineffective or burn the ear membranes; cold drops may cause dizziness with pain.
    d. Test the temperature of the medication by putting a drop on your wrist.
    e. Make sure the patient remains lying on his or her side for five minutes after instillation of the drops. If the drops are to be instilled in both ears, the patient must lie on one side for five minutes before turning to the other side for instillation.

LEARNING ACTIVITIES - continued

Clean the outside of the patient's ear with a clean, dry cotton ball. Using a circular motion, wipe from the canal to the pinna.





Have the patient lie on the side with the affected ear facing upward. If the patient is under three years, grasp the pinna and gently pull down and back. In adults or children over three, the pinna should be held up and back.

Insert the medicine dropper slightly into the external ear without touching the dropper to the ear. Instill the prescribed number of drops. Gently massage the area anterior to the ear to facilitate entry of the drops into the ear canal. Cotton moistened with medication can be inserted to keep the medication from dripping out onto clothing.

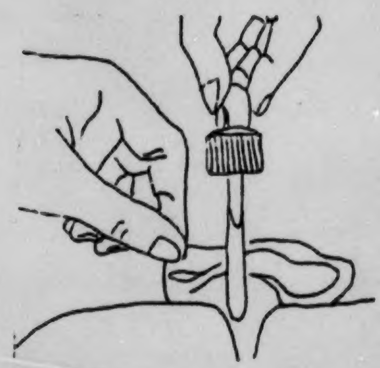


Diagram IV

LEARNING ACTIVITIES - continued

3. Irrigation of the external auditory canal:

    a. Various types of equipment may be used to irrigate the ear, but the most acceptable is an irrigating container and tubing with an irrigating tip. Usually up to 500 cc of solution is used.

    b. The solutions for irrigating the ear should be at a temperature of about 105-110 degrees fahrenheit.

    c. The patient may sit or lie with the head tilted toward the side of the affected ear. A curved basin may be placed under the ear to catch the returning solution.

    d. To be effective, the fluid must reach the eardrum. This is best accomplished by pulling the auricle downward and backwards in children and upward and backwards in adults.

    e. Extreme gentleness should be used and care must be taken that the fluid has free exit so that it is not driven into the middle ear.

    f. After the procedure, the patient is instructed to lie on the affected ear so that gravity will facilitate drainage. If injury to the tympanic membrane is suspected, irrigation should not be performed.

ACTIVITY #10. Review Exercise

Directions: Answer the following questions. Answers may be found by rereading this module and using the PDR.

1. Define the following:

    a. O.D.: ______________________________

    b. O.U.: ______________________________

    c. O.S.: ______________________________

    d. Inner canthus: ______________________________

    e. Outer canthus: ______________________________

    f. Pinna: ______________________________

    g. Tympanic membrane: ______________________________

    h. Cerumen: ______________________________

LEARNING ACTIVITIES - continued

2. Tearisol may be used to do which of the following?

   a. provide lubricaton

   b. remove debris

   c. protect against infection

3. In irrigating the eye, which of the following are important to keep in mind?

   a. Wash hands before beginning.

   b. Have the individual lie on the unaffected side so that the solution will flow from the outer canthus to the inner canthus.

   c. A forceful stream of solution may be used to remove debris.

   d. Do not touch the eye with the irrigating tip.

4. Name two ophthalmic anti-infections that are antiviral.

   a. ____

   b. ____

5. Silver nitrate 1% is used to: ______________________________

6. All ophthalmic anti-inflammatory agents contain: ____________________

7. Miotics cause pupillary ______________________________, which increases the secretion of ____________________ ____________________ thus ______________________________ ocular tension.

8. Mydriatics cause ______________________________ of the pupil and ______________________________ of accommodation. These drugs are contraindicated in ____________________ because they cause ______________________________ intraocular pressure.

9. Describe how you would instill eye ointment.

____

____

____

____

____

____

LEARNING ACTIVITIES - continued

10. To instill eye gtts, you place them:

    a. In the inner canthus.

    b. In the outer canthus.

    c. On the pupil.

    d. In the lower eyelid.

11. How do you place eyedrops in the eye of a child who is frightened, crying and will not open his/her eyes?

    ____

    ____

    ____

    ____

    ____

12. ____________________ are used to provide anesthesia in tonometry. After using this medication, the patient should be cautioned: ____________________

13. Timoptic solution is used to reduce ____________________ .

14. Cerumnolytics are used to ____________________ .

15. Temperature of an otic solution is important because:

    ____

    ____

    ____

    ____

    ____

16. When placing eardrops in children under three years, you should gently pull the pinna ____________ and ____________. In anyone over three years, you should pull the ____________ and ____________.

LEARNING ACTIVITIES - continued

17. Indicate usual dosage and patient teaching for the following medications.

a. Boric acid: ______________________

____

____

b. Aureomycin Ophthalmic: ______________________

____

____

c. Pilocarpine hydrochloride: ______________________

____

____

d. Isopto Atropine: ______________________

____

____

e. Pontocaine: ______________________

____

____

f. Timoptic solution: ______________________

____

____

g. Debrox: ______________________

____

____

LEARNING ACTIVITIES - concluded

ACTIVITY #11. How Calculating Are You?

Directions: Complete the following problems, showing your work, and turn in to your instructor at the beginning of the lecture "Drugs Used to Treat Disorders Involving the Eyes and the Ears."

1. $0.8\overline{)640}$
2. $0.07\overline{)21}$
3. $1.1\overline{)22}$
4. 1 gram = _____mg
5. Darvon 65 mg = _____grams = _____grains
6. Phenergan ℥ i = _____ʒ = _____cc = _____tsp.
7. Vasodilan 20 mg = _____grams = _____grains
8. Chlor-Trimeton 8 mg = _____grams = _____grains
9. IV - 500 cc to run in over 12 hours. The drip chamber delivers 10 gtts/cc
   _____cc/hr. _____gtts/min.
10. Dose ordered: 40 mg
    On hand - 150 mg in 2 cc
11. Dose ordered: 0.25 mg
    On hand - 0.5 mg in 2 cc
12. Dose ordered: 0.125 mg
    On hand - 0.5 mg in 2 cc
13. Dose ordered: 1 gram
    On hand - 200 mg capsules
14. Dose ordered: 0.3 grams
    On hand - grains 1.5/1 cc
15. Dose ordered: 1 mg
    On hand - 2.5 mg in 1 cc

PHARMACOLOGY

Module J, Part II - Drugs Used in the Treatment of Neoplastic Disorders

RATIONALE

In order to provide optimal nursing care you must understand how to prepare and administer medications to a patient with neoplastic disease and you must understand how these medications can affect the patient.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the classification of drugs commonly used in the treatment of neoplastic diseases.
2. Identify side effects of drugs commonly used in the treatment of neoplastic diseases.
3. Identify nursing considerations that relate to the administration of drugs used in the treatment of neoplastic diseases.
4. Identify major uses for selected drugs in the treatment of neoplastic diseases.
5. Identify general principles relating to the administration of antineoplastic drugs.
6. Calculate and convert dosages for drug administration.
7. Demonstrate setup and administration of medication in the treatment of cancer when given an assignment in the clinical area.

LEARNING ACTIVITIES

Directions: All of the information needed to complete Module J and to pass the test is included in this module and the PDR (Physician's Desk Reference). Exercises have been designed to help you learn the material and focus on areas not specifically included (such as recommended dosages for individual drugs).

Since so many medications are included in this module, an effort has been made to simplify your study for the test by placing a star next to the more common drugs that may be included on the test.

You will better understand these drugs if you first complete Module 17-J, "Nursing Care for Patients with Cancer."

Remember: Much of the information related to these drugs is generalized and based upon the classification of the drug. Therefore, when giving a drug, LOOK UP EACH DRUG for its specific side effects, nursing considerations, actions, uses and dosage.

LEARNING ACTIVITIES - continued

ACTIVITY #1. General Information Relating to Drugs Used in the Treatment of Neoplastic Diseases

Directions: Read the following.

Human cancer encompasses a group of over 100 related diseases that constitute the second greatest cause of death in the U.S. and Western Europe.

The use of antineoplastic drugs is more common today than it was two or three years ago. At one time they were used only as a last-ditch effort, however, today they are widely used to prolong lives, often in combination with surgery and radiation therapy.

Ideally, the goal of chemotherapy is to cure the patient. However, this can only be done by destroying every cancer cell within the body. This is difficult because an antineoplastic drug can only destroy a fraction of the cells at any given time. Most agents act to interfere with cell duplication and only a certain number of cells are reproducing at any given time. To effectively eradicate a malignant tumor, then, either very large dosages must be administered or treatment must be started when the number of cells is small enough to allow destruction at tolerable doses.

Chemotherapeutic drugs exert much of their affect on cells that divide rapidly - as do cancer cells. However, other cells within the body also divide rapidly and these, too, are extrememly susceptible to the toxicity produced by the chemotherapeutic agents. These cells include the:

1. Bone Marrow.
2. Skin.
3. GI mucosa.
4. Hair follicles.
5. Fetal tissues.

Combination Therapy

In many cases, the best way to destroy cancer cells with chemotherapy is to combine many different antineoplastic drugs. This delays the development of neoplastic cells resistant to specific antineoplastic agents and obtains an additive or complementary therapeutic effect with minimum toxicity. Combined antineoplastic agents are usually scheduled so that the drugs have different side effects or the same side effects but occuring at different time intervals.

The following chart shows some examples of drug combinations and treatment.

Example of Common Protocol for Combination Chemotherapy

MOP	COP	COAP	MAC
(repeated every 28 days)	(repeated every 15 days)	(regulated according to degree of bone marrow depression)	(repeated every 21 days)
Mechlorethamine (Nitrogen Mustard) 6 mg/m^2 IV push on days 1 and 8 Vincristine sulfate (Oncovin) 1.4 mg/m^2 IV push on days 1 and 8 Procarbazine (Matulane) 100 mg/m^2 per day P.O. for 10 days Prednisone: 40 mg/m^2 per day P.O. for 10 days.	Cyclophosphamide (Cytoxan) 800 mg/m^2 IV push on day 1 Vincristine (Oncovin) 1.4 mg/m^2 on day 1 Prednisone: 100 mg total daily dose (25 mg q.i.d. for five days).	Cyclophosphamide (Cytoxan): 100 mg/m^2 per day IV for 5 days Vincristine (Oncovin) 1.4 mg/m^2 as IV push on day 1 Cytarabine (Ara-C): 100 mg/m^2 per day for 5 days as continuous IV infusion Prednisone: 100 mg total daily dose (25 mg q.i.d. for 5 days).	Methotrexate: 4 mg/m^2 IV per day for 5 days Dactinomycin (Actinomycin D) 0.5 mg IV per day for 5 days Cyclophosphamide (Cytoxan) 120 mg/m^2 IV per day for 5 days.
OAP	POMP	COMFU-P	CODFU
(regulated according to the degree of bone marrow depression)	(regulated according to the degree of bone marrow depression)	(repeated monthly)	(repeated monthly)
Vincristine (Oncovin) 1.4 mg/m^2 IV push on day 1 Cytarabine (Ara-C) 200 mg/m^2 per day for 5 days as continuous IV infusion Prednisone: 100 mg total dose daily (25 mg q.i.d. for 5 days).	6-Mercaptopurine (Purinethol) 500 mg/m^2 per day for 5 days Vincristine (Oncovin): 1.4 mg/m^2 IV push on days 1 and 7 Methotrexate: 7.5 mg/m^2 IV daily for days Prednisone: 100 mg per day (25 q.i.d.) for 5 days.	Cyclophosphamide (Cytoxan): 120 mg/m^2 IV per day for 5 days Vincristine (Oncovin) 0.625 mg/m^2 IV push on days 1 and 5 Methotrexate: 4 mg/m^2 IV per days for 5 days Prednisone: 40 mg/m^2 per day in divided doses for 5 days.	Cyclophosphamide (Cytoxan) 120 mg/m^2 IV per day for 5 days Vincristine (Oncovin) 0.625 mg/m^2 IV push on days 1 and 5 Dactinomycin (Actinomycin D) 0.25 mg IV per day for 5 days 5-Fluorouracil (5-FU): 180 mg/m^2 IV per day for 5 days.

LEARNING ACTIVITIES - continued

Assessing Your Patient

Before chemotherapy is begun, it is YOUR JOB to assess the patient. This includes the following areas:

1. Nutritional status
   - a. Balanced diet.
   - b. Check weight.
   - c. Check muscle tone.
   - d. Check skin turgor.
2. Skin condition
   - a. Check for skin lesions.
   - b. Check for incisions and wounds (antineoplastics interfere with wound healing).
3. Oral condition
   - a. Check for gum conditions.
   - b. Are there ill-fitting dentures?
   - c. Is oral hygiene good or poor?
4. Degree of mobility
   - a. How much activity before the patient fatigues?
   - b. How much activity before there is an increase in respirations?
   - c. Are there symptoms of hypoxia?
5. Psychological status
   - a. Personality
   - b. Emotional state
   - c. Relationships with family members (Chemotherapy can produce psychological changes.)

Example: Prednisone produces euphoria.
Methotrexate produces malaise.
Vincristine produces depression.

LEARNING ACTIVITIES - continued

Drug Administration

Before administering antineoplastic agents (or any other drug) to any patient ALWAYS research the drug to be given.

It is also important to double check all medications against the doctor's order sheet, not solely against the Medex. This prevents fatal mistakes from occurring when you are giving drugs with similar names (e.g. 5 FC or 5 FU, BCNU or CCNU).

If the patient has had an emesis after an oral dose, notify the doctor. It may be a sign of toxicity, and the patient may also have lost the dose. The doctor may need to alter the chemotherapy.

Many antineoplastic drugs are given intravenously, which means the patient must be closely monitored. Too rapid infusion of some drugs may cause toxic effects. With other drugs, infiltration may cause necrosis.

Side Effects

After administration of the drug, observe for side effects.

Not all side effects are bad. The good things to watch for include:

1. Increased appetite.
2. Increased mobility.
3. Increased tolerance for exercise.
4. Improved breathing.

Bone marrow depression is one of the bad side effects. This is one of the most important factors in determining the dosage of antineoplastic agents. Dosage should be reduced if this happens.

White blood cells (WBC) and platelets are indicators of bone marrow depression. When the WBC count drops below 4000 cells or the platelet count drops below 120,000 cells, the dose of most drugs is reduced by 50%. Further dosage reductions are made when the WBC count falls below 2,500 cells or the platelets fall below 80,000 cells. At this point all drugs are usually held except Bleomycin.

The destruction of WBC by antineoplastic agents interferes with the patient's normal immune response, making the patient highly susceptible to infection. The patient should be carefully monitored for signs of infection, such as sore throat or elevated temperature. Since antineoplastic destruction of platelets may cause spontaneous bleeding that is difficult to stop, the nurse should be alert to any bleeding or easy bruising.

LEARNING ACTIVITIES - continued

Another common bad side effect is alopecia because the administration of antineoplastic agents damages hair follicles. Hair loss may include scalp hair, eyelashes, eyebrows, underarm and pubic hair. This loss has been minimized with the advent of scalp tourniquets. The rationale for using a scalp tourniquet is that the drug contact with hair follicles can be minimized because the scalp is supplied by superficial blood vessels that can be temporarily occluded by pressure and because the drugs are rapidly cleared from the blood after injection.

If alopecia occurs, the patient should be reassured that hair grows back about eight weeks after therapy is stopped.

GI side effects are common in the administration of the antineoplastic agents.

Nausea, vomiting and anorexia commonly result from the use of antineoplastic agents. The patient will need nutrients to maintain cellular function. Severe vomiting may cause fluid and electrolyte imbalance. Giving an antiemetic and small amounts of bland food one-half hour before giving antineoplastics may help reduce the nausea and vomiting. Small nutritious snacks and favorite foods brought by family members may speed recovery. Having flexible mealtimes is also important.

Stomatitis is an early sign of bone marrow toxicity. Excellent mouth care is a must. Mucosal deterioration sets in when more than six hours pass without mouth care.

Suggestions for mouth care might include:

1. Hydrogen peroxide and water directly in the oral mucosa followed by a coating of a substrate of MOM (discard clear liquid at the top of the MOM) every four hours.
2. Lemon and glycerine should not be used as they decrease saliva, change the pH and dry the oral mucosa.
3. Use lidocaine viscous as an oral rinse prior to eating to provide relief from eating discomfort.

Diarrhea and abdominal cramping due to hypermotility from cellular damage is another common problem. Report to the doctor and give antidiarrheals as needed. It may eventually lead to electrolyte imbalance, dehydration and acidosis.

ACTIVITY #2. Alkylating Agents

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
busulfan	Myleran
*carmustine	BCNU
*chlorambucil	Leukeran
*cis-platinum	Platinol

LEARNING ACTIVITIES - continued

GENERIC NAMES	TRADE NAMES
*cyclophosphamide	Cytoxan
dacarbazine	DTIC
*lomustine	CCNU
*mechlorethamine HCL	Mustargen
melphalan	Alkeran
pipobroman	Vercyte
*thiotepa	Thiotepa
triethylene melamine	TEM
uracil mustard	

Major Uses

These drugs are primarily used in the treatment of malignacies of the hematopoietic tissues, neuroblastoma and disseminated carcinomas of the lungs, ovaries, testes and breast.

Mechanism of Action

These drugs can act during any phase of the cell's life (cell cycle) to destroy the cancer cells. For this reason they are called cell-cycle nonspecific agents.

Side Effects

Side effects vary from drug to drug, but may include:

1. GI irritation (nausea, vomiting and diarrhea)
2. Alopecia
3. Severe to moderate depression of peripheral blood cell count and bone marrow
4. Leukopenia
5. Thrombocytopenia
6. Bleeding

Nursing Considerations

1. Remissions are characterized by increased appetite and sense of well-being within a few days after therapy begins.
2. Discuss the possibility of alopecia with the patient so that plans for temporary cosmetic substitution can be made. Advise the patient to brush hair gently and no more than is necessary.

LEARNING ACTIVITIES - continued

3. Be alert to signs of hepatic toxicity (jaundice, dark urine, pruritis, clay-colored stools) and renal insufficiency (dysuria, oliguria, hematuria).

4. Instruct the patient to inform the physician promptly at the onset of sore throat, weakness, fever, infection of any kind or abnormal bleeding (ecchymosis, epistaxis, petechiae, hematemesis, melena).

ACTIVITY #3. Antimetabolites

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*azathioprine	Imuran
cytarabine	Cystosar, Ara-C
fluoridine	FUDR
*fluoracil	5FU, Efudex
hydroxyurea	Hydrea
mercaptomerin	Purinethol, 6-MR
*methotrexate	
methotrexate sodium	
thioguanine	Lanvis, 6-TG

Major Uses

The antimetabolites appear to be most effective in the treatment of malignancies that are metabolically very active, such as acute lymphoblastic leukemia in children and other leukemias, choriocarcinoma carcinomas of the breast, tongue, pharynx and testes, palliative treatment of breast, colon or rectal cancer.

These drugs also have immunosuppressive abilities, for example Imuran is used in renal transplants.

Mechanism of Action

Antimetabolites are cell-cycle specific, acting only during certain cycles of the cell's life. They function in one of two ways.

1. They may substitute for a component in a necessary cellular chemical compound. The resulting cell product fails to function as a result, thereby blocking cell division.

2. Or they may also inhibit a key enzyme function, thereby interfering with normal cellular metabolism.

Side Effects

1. Bone marrow depression

2. Oral and GI mucosal ulceration

3. Hemorrhage

LEARNING ACTIVITIES - continued

4. Alopecia

5. Hepatotoxicity

6. Jaundice

Nursing Considerations

1. Hyperuricemia due to excessive cell destruction may accompany usage of any of these medications. A uricosuric agent such as Zyloprim may be prescribed and adequate fluid intake encouraged (depending on the patient's status) to prevent uric acid deposits.

2. With usage of methotrexate:

   a. Oral preparations should be given one to two hours before or two to three hours after meals. Alcohol ingestion increases the incidence of and severity of hepatotoxicity.

   b. The patient should be warned not to self-medicate with vitamins, as some OTC compounds may include folic acid or its derivatives, which alter methotrexate response.

ACTIVITY #4. Antineoplastics Altering Hormone Balance

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
calusterone	
*des diphosphate	Stilphostrol and Stibilum
dromostanolone propionate	
medroxynprogesterone acetate	Depo-Provera
*megestrol acetate	Megace
*mitotane	Lysodren
polyestradiol phosphate	
*prednisone	
tamoxifen citrate	Nolvadex
testolactone	Teslac

The rationale underlying the use of hormones as antineoplastic agents is based on the assumption that malignancies arising from sexual organs have hormonal requirements similar to those of nonmalignant sexual organs. By changing the hormonal environment, therefore, it is possible to alter (to some degree) the course of the neoplastic process.

LEARNING ACTIVITIES - continued

Major Uses

These drugs exert a palliative effect in breast, endometrial, prostate and adrenal cortical cancers. Androgens, for example, are used in the treatment of metastatic breast cancer in premenopausal women. Estrogens are used in the treatment of metastatic breast cancer in postmenopausal women. Because of their lymphocytic effects, the adreno-corticosteroids find their greatest value in the treatment of acute leukemia in children. They are also used in conjunction with x-ray therapy to decrease the occurrence of radiation edema in critical areas, such as the brain or spinal cord.

Side Effects

1. Fluid retention
2. Nausea and vomiting
3. Feminization and gynecomastia in men, masculinization in women
4. Weight gain
5. Acne
6. Uterine bleeding
7. Increased libido
8. Psychiatric changes
9. Induced diabetes

Nursing Consideration

The patient should be advised that therapeutic response may not be immediate.

ACTIVITY #5. Antibiotic Agents

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*bleomycin sulfate	Blenoxane
*doxorubicin HCL	Adriamycin
dactinomycin	Cosmegen, Actinomycin D
mithramycin	Mithracin
mitomycin	Mytamycin
procarbazine HCL	Matulane, Natulan, MTH

LEARNING ACTIVITIES - continued

Antineoplastic antibiotics are isolated from naturally occurring microorganisms that can inhibit bacterial growth. But unlike the anti-infective drugs they are related to, antineoplastic antibiotics can disrupt the function of the host as well as the bacterial cells. Procarbazine HCL is not an antibiotic but acts in a similar manner to the antineoplastic antibiotics.

Major Uses

Treatment of lymphomas, leukemias, sarcomas and some carcinomas.

Side Effects

1. Stomatitis
2. Nausea and vomiting
3. Alopecia
4. Bone marrow depression
5. Mucous membrane ulceration

Nursing Considerations

1. After using Adriamycin, the patient's urine may be colored red for one or two days.

   Also, care should be taken to avoid IV infiltration with this drug. If the patient complains of burning or stinging around the injection site, notify the nurse in charge immediately even though a blood return can be seen.

2. Care should also be taken to avoid infiltration of dactinomycin, mithracyn and mitomycin.

3. While using procarbazine HCL, the patient should avoid foods high in or containing tyramine because they could cause an hypertensive crisis. Also ingestion of any form of alcohol may precipitate an antabuselike reaction.

ACTIVITY #6. Vinca Alkaloids

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*asparaginase	Elspar
*vinblastin sulfate	Velban, Velbe (VLB)
*vincristine sulfate	Oncovin

LEARNING ACTIVITIES - continued

Vincristine sulfate and vinblastine sulfate are agents derived from the periwinkle plant, Vinca rosea. Their potential for serious neurotoxicity limits their usefulness. Asparaginase is an agent derived from the bacterial Escherichia coli (E. coli) and is used in combination with other antineoplastic drugs.

Major Uses

1. Treatment of lymphomas, leukemia, sarcomas and some carcinomas.
2. Adjunctive treatment of acute lymphocytic leukemia.

Side Effects

1. Asparaginase
    a. Depression of clotting factors
    b. Depression
    c. Fatigue
    d. Nausea and vomiting
    e. Anorexia
    f. Weight loss
2. Vinca rosea
    a. Depression
    b. Orthostatic hypotension
    c. Tachycardia
    d. Bone marrow depression
    e. Nausea and vomiting
    f. Anorexia
    g. Alopecia

Nursing Considerations

1. Giving an antiemetic prior to administration of these drugs may reduce nausea.
2. Take immediate action if an IV solution of vinblastine infiltrates.

LEARNING ACTIVITIES - continued

ACTIVITY #7. Review Exercises

Directions: Answer the following questions. Answers may be found by reviewing the material in this module and using the PDR.

1. Name two ways to effectively stop the growth of a malignant tumor.

   a. ____________________

   ____

   b. ____________________

   ____

2. Why is treatment of neoplastic diseases often done by using a combination of drugs?

   ____

   ____

   ____

3. Prior to administering antineoplastic agents, it is wise to make a baseline assessment of your patient in five different areas. These are:

   a. ____________________

   b. ____________________

   c. ____________________

   d. ____________________

   e. ____________________

4. List three different side effects that are common to the administration of antineoplastics and the nursing measures that may help alleviate or ease these problems.

   a. ____________________ ____________________

   b. ____________________ ____________________

   c. ____________________ ____________________

LEARNING ACTIVITIES - continued

5. A group of drugs also used for the immunosuppressive properties are the:

____

6. Hormonal drugs are used in the treatment of cancer for the ______________ ______________ effect they exert.

7. Antineoplastic antibiotics are isolated from: ______________

8. Vincristine and vinblastine come from: ______________

9. Indicate the usual dosages and routes for the following medications.

   a. Cytoxan: ______________

   ____

   b. Thiotepa: ______________

   ____

   c. Imuran: ______________

   ____

   d. Methotrexate: ______________

   ____

   e. Bleomycin: ______________

   ____

   f. Megace: ______________

   ____

   g. Oncovin: ______________

   ____

LEARNING ACTIVITIES - concluded

ACTIVITY #8. How Calculating Are You?

Directions: Complete the following problems, showing your work, and turn in to your instructor at the beginning of the lecture "Drugs Used in the Treatment of Cancer."

1. 2.7 X 3.8 =
2. $0.5\overline{)25}$
3. $2\overline{)0.1}$
4. 500 mg = _____grams
5. Mylanta ℥ss = _____ʒ = _____cc = _____tsp.
6. ASA grain X = _____grams = _____mg
7. Reserpine 0.1 mg = _____grams = _____grains
8. Tofranil 25 mg = _____grams = _____grains
9. IV of 1000 cc to run in over a period of 14 hours. Drip chamber delivers 15 gtts/cc. _____cc/hr. _____gtts/min.
10. On hand - 1 gram in 1 cc
    750 mg ordered
11. Dose ordered: grain 1/750
    On hand - grain 1/500 in 1 cc
12. Ordered: grain 1/32
    On hand - grain 1/30 in 1 cc
13. Ordered: grain 1/75
    On hand - grain 1/50 in 1 cc
14. Dose ordered: 5 mg
    On hand - 15 mg in 2 cc
15. Dose ordered: 2 mg
    On hand - 10 mg in 2 cc
16. Dose ordered: 2.5 mg
    On hand - 50 mg in 10 cc

PHARMACOLOGY

Module K, Part II - Medication Used in the Treatment of Infectious Disorders

RATIONALE

In order to provide optimal nursing care you must understand how to prepare and administer medications to a patient with infectious disorders and you must understand how these medications can affect the patient.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the classification of drugs commonly used in the treatment of infectious disorders.
2. Properly reconstitute a drug and show the method by which this was done.
3. Identify side effects of drugs commonly used in the treatment of infectious disorders.
4. Identify nursing considerations that relate to the administration of drugs used in the treatment of infectious disorders.
5. Identify general principles relating to the organisms and drugs used in the treatment of infectious disorders.
6. Identify major uses for selected drugs in the treatment of infectious disorders.
7. Calculate and convert dosages for drug administration.
8. Demonstrate setup and administration of medication in the treatment of infectious disorders when given an assignment in the clinical area.

LEARNING ACTIVITIES

Directions: All of the information needed to complete Module K and to pass the test is included in this module and the PDR (Physicians Desk Reference). Exercises have been designed to help you learn the material and focus on areas not specifically included (such as recommended dosages for individual drugs).

Since so many medications are included in this module, an effort has been made to simplify your study for the test by placing a star next to the more common drugs that may be included on the test.

You will better understand these drugs if you first complete Module 17-K, "Nursing Care for Patients with Infectious Diseases."

LEARNING ACTIVITIES - continued

Remember: Much of the information relating to these drugs is generalized and based upon the classification of the drug. Therefore, when giving a drug, Look Up Each Drug for its specific side effects, nursing considerations, actions, uses and dosage.

ACTIVITY #1. General Information Relating to Drugs Used in the Treatment of Infectious Disorders

Directions: Read the following.

The "antibiotic era" as we know it began with the therapeutic evaluation of penicillin by Sir Eric Fleming in 1938. Today the use of antibiotics is widespread. Antibiotics are drugs made from substances produced by microorganisms or imitations of these same substances. They are primarily effective against bacteria, though some rickettsiae and the larger viruses may also be affected.

The modes of action among antibiotics differ, some exerting a bactericidal effect, while others exert a bacteriostatic effect. Bactericidal antibiotics work by destroying the organism, primarily affecting the cell wall. Bacteriostatic antibiotics inhibit the growth and reproduction of the bacteria, permitting destruction by the patient's own defenses.

Antibiotics also differ in the range of microorganisms they affect, or their "spectrum of action." Narrow spectrum drugs are effective against relatively few microorganisms, usually limited to either gram negative or gram positive organisms. Broad spectrum antibiotics affect a wider range of microorganisms, often including both gram negative and gram positive organisms, plus some of the rickettsiae.

When an antibiotic is administered, it is usually effective against sensitive bacteria. Microorganisms that have developed a resistance to the drug, either because of "survival of the fittest" or random mutation, will continue to grow and reproduce. Thus, it becomes important that doctors prescribe the most effective antibiotic and to help them do this they will order a culture and sensitivity when possible. To further the effectiveness of the antibiotic, it must be administered as ordered, especially at the proper time intervals. Omitting or delaying a dose can affect the therapeutic value of the drug by altering its blood level. Further, think about this: Each time microorganisms are exposed to a drug, they have the opportunity to become more resistant as the more sensitive microoranisms are killed and the more resistant ones survive. Therefore, indiscriminate use of antibiotics should be avoided.

Vulnerability to superinfection can become a problem with antibiotic use. A superinfection is a new infection produced by organism strains insensitive to the antibiotic treatment. Such an infection can develop after as few as four to five days of antibiotic therapy.

Gram negative bacteria (proteus and pseudomonas) plus candida are traditionally the culprits in superinfection. These bacterial infections may develop from the overgrowth of normally present organisms, from those acquired through other patient and staff contact or from accidental bacterial contamination during drug injection.

LEARNING ACTIVITIES - continued

Superinfection can change a self-limiting disease into a serious, prolonged or fatal one, so follow these suggestions for avoiding it.

1. Use aseptic technique in carrying out patient care. Wash hands frequently in between treating patients, before and after all procedures.

2. Keep dressings dry and clean.

3. Check IV site for signs of phlebitis or infiltration (swelling at or above infusion site, tenderness, warmth and redness at or around the site). The IV should be pulled and restarted in a new site if this occurs.

4. Change IV tubing, dressing and solutions every 24 hours.

5. Keep visitors or staff with colds or sore throats away from the patient.

Once the administration of antibiotics has begun, observe for response to therapy. Signs of improvement may be indicated by:

1. Decrease in purulent drainage.

2. Decrease in temperature.

3. Improved appearance.

4. Decrease in pain or discomfort.

5. Decreased white blood cells count.

Also observe for appearance of side effects. Listen to the patient's complaints and report them. Do a physical assessment each shift.

ACTIVITY #2. Organisms Commonly Associated with Infectious Disease Processes

Directions: Read the following.

As you read more about antibiotics and the organisms that they are used against, you may encounter the terms "gram negative" or "gram positive." This is a method of classifying the microorganism. The organism is stained and then studied under the microscope. An organism that retains the blue color of the gentian violet stain is gram positive. A gram negative organism will lose the stain and appear red.

Common gram negative and gram positive organisms plus the disease caused and antibiotics used can be found in tables 1 and 2.

CHIEF GRAM POSITIVE BACTERIA

GENUS	SPECIES	DISEASE CAUSED IN MAN	TREATMENT	ALTERNATIVE
Streptococcus	pyogenes	tonsillitis suppuration scarlet fever septicemia	benzathine penicillin G penicillin V	erythromycin
Streptococcus	viridans	subacute bacterial endocarditis	procaine penicillin G streptomycin	cephalothin and streptomycin
Staphylococcus	aureus	pneumonia	nafcillin or oxacillin	cephalothin or clindamycin
Clostridium	tetani	tetanus	penicillin G	chloramphenicol
Clostridium	botulinum	botulism	penicillin G	chloramphenicol
Clostridium	perfringens	gas gangrene	penicillin G	chloramphenicol
Diplococcus	pneumoniae	pneumonia and other infections	not given	not given

Table I

CHIEF GRAM NEGATIVE BACTERIA

GENUS	SPECIES	DISEASE CAUSED IN MAN	TREATMENT	ALTERNATIVE
Pseudomona	aeruginosa	suppuration (Blue Pus)	Gentamycin or Tobramycin	Carbenicillin
Neisseria	meningitis	cerebrospinal meningitis	penicillin G	chloramphenicol
Neisseria	gonorrhoeae	gonorrhea	Procaine penicillin G+ Probencid	Spectinomycin or Tetracycline
Proteus	vulgaris	suppuration	Gentamycin or Tobramycin	Carbenicillin or Chloramphenicol
Escherichia	coli	cystitis and pyelitis suppuration	Ampicillin	Sulfonamide or Tetracycline
Klebsiella	pneumoniae	pneumonia	Gentamicin or Tobramycin	Cephalothin Chloramphenicol
Salmonella	typhosa	typhoid fever	Chloramphenicol	Ampicillin or Trimethoprim-sulfamethoxazole
Salmonella	parathyphi enteritidis tymphimurium	paratyphoid fever gastroenteritis (food poisoning)	Ampicillin	Chloramphenicol or Trimethoprim-sulfamethonazole
Shigella	dysenteriae	bacillary dysentary	Ampicillin	Tetracycline or Chloramphenicol
Hemophilus	infuenzae	meningitis conjunctivitis influenza	Ampicillin	Sulfonamide

Table II

LEARNING ACTIVITIES - continued

ACTIVITY #3. Antifungals

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*amphotericin B	Fungizone
griseofulvin USP, microsize	Fulvicin - U/F
griseofulvin ultramicrosize	Fulvicin - P/G, Gris-PEG
miconazole	Monistat IV
*nystatin	Mycostatin

The antifungals are agents used for yeast or moldlike infections (mycotic infections). These infections have become more prominent since the increased use of antibiotics has decreased the normal flora that ordinarily control the fungus. Antifungal therapy, however, has not developed to the same degree as other antibiotic therapy. Most fungi are completely resistant to the action of chemicals at concentrations that can be tolerated by the host. Therefore only a few drugs are currently available for use.

Major Use

1. To treat systemic fungal infections and meningitis.
2. To treat severe fungal infections caused by candida organisms.
3. To treat ringworm infection of the skin, hair and nails.
4. To treat monilial infections of the oral cavity (thrush) and of the vaginal and intestinal tracts (candida).
5. To treat infections caused by yeast.

Mechanisms of Action

1. Amphotericin B (Fungizone) may be fungicidal or fungistatic. Nystatin (Mycostatin) is primarily fungistatic.

Side Effects

1. Blood dyscrasias
   a. Anemia
   b. Leukopenia
   c. Granulocytopenia

LEARNING ACTIVITIES - continued

2. Nausea
3. Vomiting
4. Diarrhea
5. With Amphotericin B given IV, the following may occur:
    a. Tissue damage with infiltration
    b. Chilling
    c. Increased fever
    d. Malaise

Nursing Considerations

1. Fungizone (amphotericin B) is a potent drug administered only to closely supervised patients with confirmed diagnosis of progressively fatal fungal diseases. The solution should be protected from light during administration. During IV administration the patient may experience:
    a. Fever
    b. Chills
    c. Headache
    d. Malaise
    e. Nausea and vomiting
    f. Abdominal cramps
2. With the administration of Fulvicin
    a. Caution the patient to avoid exposure to intense light, as photosensitive reaction may occur.
    b. Giving the drug with meals may alleviate GI distress.
    c. Warn the patient that tachycardia and flushing may occur if alcohol is taken during therapy.
3. With the administration of Mycostatin
    a. Instruction in proper hygiene and skin care to prevent the spread of infection is an essential aspect of treatment. Advise the patient to change stockings and underclothing daily.

LEARNING ACTIVITIES - continued

b. For oral candidiasis, the oral preparation should be placed in both sides of the mouth and swished from side to side for one to two minutes before swallowing. Good oral hygeine is important and the mouth should be cleared of oral debris before administering the drug.

ACTIVITY #4. Antimalarials

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*amodiaquine hydrochloride	Camoquin HCL
*chloroquine HCL	Roquine
*hydroxychloroquine sulfate	Plaquenil Sulfate
primaquine phosphate	
*quinacrine	Atabrine HCL
quinine sulfate	Coco-Quinine

Malaria is a disease that can be caused by four species of protozoal parasites usually injected into man by the mosquito bite. Inside the human host they penetrate the erythrocytes, where they mature, reproduce and at maturity burst out of the red blood cells. The simultaneous rupturing of RBC's produces chills followed by an elevated temperature that may rise to 104° to 105° F. The medications listed above have been found effective in treating malaria.

Major Uses

1. To provide suppressive treatment and treatment of acute attacks of malaria.
2. Certain compounds are also used in treating lupus erythematosus, rheumatoid arthritis, tapeworm and extraintestinal amebiasis.

Side Effects

1. Blood dyscrasias
    a. WBC agranulocytosis
2. GI distress
    a. Nausea
    b. Vomiting
    c. Diarrhea
    d. Anorexia

LEARNING ACTIVITIES - continued

3. Pruritis

4. Rashes

Nursing Considerations

1. GI effects may be minimized by administering the drug with meals or with an antacid.

2. Inform the patient that Roquine may cause rusty-brown or yellow discoloration of the urine.

3. With the administration of Atabrine HCL the patient may have a reversible yellow skin discoloration and a grayish-blue tinge to the ears, nasal cartilage and fingernail beds. This usually disappears two weeks after therapy has been discontinued.

ACTIVITY #5. Antituberculars and Antileprotics

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
cycloserine	Seromycin
*dapsone	Avlosulfon
*ethambutol HCL	Myambutol
ethionamide	Trecator
*isoniazid	INH
*para-Aminosalicylates	PAS
*rifampin	Rifadin
streptomycin sulfate	
sulfoxone sodium	Diasone Sodium
viomycin sulfate	Viocin

Leprosy is a chronically communicable disease caused by the bacterium Mycobacterium leprae. Avlosulfon and Diasone Sodium exert a bacteriostatic effect on this organism. These drugs bring about a suppression of the disease, prevent new lesions from appearing, promote the healing of many lesions and allow the defense mechanisms of the body to keep the disease inactive. Their action is slow and improvement may not be seen for several months. The clinical manifestations of leprosy can be suppressed by treatment extending over several years.

The tubercle bacillus, Mycobacterium tuberculosis, is responsible for the infectious disease process of TB. The treatment of TB requires a long course of treatment (12-36 months). This prolonged treatment presents problems such as:

1. Drugs that are effective against the tubercle bacillus may produce serious toxic effects after prolonged administration.

2. The chance of emergence of drug-resistant organisms increases with the length of treatment.

LEARNING ACTIVITIES - continued

All of this may make drug therapy complex. Four drugs have emerged as the "first line" or primary drugs used in the treatment of TB. These four are:

1. INH
2. Streptomycin
3. PAS
4. Myambutol

If these prove to be ineffective or if the patient develops resistant tubercle bacilli, the "second line" or secondary drugs are used. They may include:

1. Seromycin
2. Viocin
3. Trecator
4. Kanamycin (an aminoglycoside)

Major Uses

1. To prevent or treat all forms of tuberculosis.
2. To treat all forms of leprosy.

Side Effects

1. Blood dyscrasias
2. Headache
3. Anorexia
4. Nausea
5. Vomiting
6. Ototoxicity
7. Neurotoxicity with some drugs

Nursing Considerations

1. With the administration of Seromycin, advise the patient to avoid driving and other hazardous tasks until the patient response to the medication has been determined. Also caution the patient to avoid alcohol during therapy as the risk of convulsive seizure increases.

LEARNING ACTIVITIES - continued

2. In general, isoniazid (INH) therapy is continued for a minimum of 18 months to 2 years for original treatment of active TB and 12 months when used as preventative therapy.

3. With the administration of rifampin (Rifadin):

   a. Administer the dosage one hour before or two hours after a meal. Peak serum levels are delayed and may be slightly lower when given with food.

   b. Advise the patient that the drug may give a harmless red-orange color to the urine, feces, sputum, sweat and tears.

   c. Advise patients taking birth control drugs that alternative methods of contraception should be used because of decreased effectiveness when used in combination.

4. With the administration of Viocin and streptomycin sulfate, ototoxicity is something that needs to be watched for. Audiometric testing should be done before, during and six months after discontinuation of the therapy.

ACTIVITY #6. Aminoglycosides

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
amikacin sulfate	Amikan
*gentamicin sulfate	Garamycin
*kanamycin sulfate	Kantrex
neomycin sulfate	Neobiotic
*streptomycin sulfate	
*tobramycin sulfate	Nebcin

The aminoglycosides are a group of antibiotics generally reserved for serious life-threatening infections. Their widespread use has resulted in some resistant strains and these drugs manifest a high degree of cross resistance.

Major Uses

1. To treat infections caused by gram negative organisms.

2. Bowel sterilization prior to GI surgery. Antibiotics specific for organisms found in the bowel may be administered 3-5 days before surgery in an attempt to decrease bacterial count of the bowel contents, which helps to decrease the incidence of postop wound infection. Drug absorption from the GI tract is poor and thus the concentration in the blood stream is low.

3. Bowel sterilization in hepatic coma. They destroy bacteria in the intestine that breakdown the protein to urea. By doing this, the amount of ammonia formed is subsequently reduced.

LEARNING ACTIVITIES - continued

Side Effects

1. Nephrotoxicity
    - a. Increased BUN and serum creatinine
    - b. Oliguria
    - c. Proteinuria
2. Rash
3. Overgrowth of nonsusceptible organisms
4. Nausea and vomiting
5. Ototoxicity and injury to the 8th cranial nerve
    - a. Vertigo
    - b. Tinnitus
    - c. Hearing impairment

Nursing Considerations

1. Because of the nephrotoxicity, an accurate I & O is very important. The nurse should also monitor the BUN and serum creatinine.
2. Irreversible damage to the auditory branch of the 8th cranial nerve may occur. Patients should be advised to report any unusual symptoms related to the ears or hearing.
    - a. Tinnitus
    - b. Roaring sounds
    - c. Loss of hearing acuity
    - d. Dizziness

LEARNING ACTIVITIES - continued

ACTIVITY #7. Cephalosporins

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*cefaclor	Ceclor
*cefadroxil monohydrate	Duricef
*cefamandole naftate	Mandol
*cefoxitin sodium	Mefoxin
cephalothin sodium	Keflin
*cephapirin sodium	Cefadyl
cephradine	Velosef, Anspor
*cefazolin monhydrate	Kefzol, Ancef
cephaloglycin dihydrate	Kafocin
cephaloridine	Loridine

The cephalosporin antibiotics were introduced in the early 1960's and are a group of semisynthetic derivatives of cephalosporin C, an antibiotic produced by the fungus Cephalosporium acremonium. This group of antimicrobial drugs has many similarities to the penicillins.

Major Uses

1. To treat infections caused by gram positive cocci (except enterococci), penicillinase-producing staphylococci and some gram negative bacilli, including E. coli, Porteum mirabila and Klebsiella. These drugs are often used to treat penicillin-allergic patients. However, a small percentage of these patients subsequently develop allergies to cephalosporins.

2. Parenteral cephalosporins are used to treat infections of the respiratory tract, skin, soft tissue, genitourinary tract, bones and joint plus septicemia and endocarditis caused by sensitive organisms.

3. Oral cephalosporins are used to treat otitis media, infections of the respiratory tract, skin, soft tissue and genitourinary tract.

Side Effects

1. Nausea
2. Vomiting
3. Diarrhea
4. Abdominal discomfort
5. Blood dyscasias
6. Dizziness
7. Headache

LEARNING ACTIVITIES - continued

8. Nephrotoxicity
9. Hypersensitivity
10. Anaphylaxis
11. Rashes
12. Urticaria
13. Oral candidiasis
14. Pruritis

Nursing Considerations

1. Clinitest tablets may give a false positive reading in patients taking cephalosporins. Testape should be used in these cases.
2. Originally it was claimed that the cephalosporins could be administered to persons allergic to penicillin without fear of reaction. At present, however, this is controversial, and it is not clear whether or not the cephalosporins have cross-sensitivity with the penicillins. To be safe, it is wise to check with the doctor to make certain the doctor knows the patient has a penicillin allergy when a cephalosporin has been ordered. Then, if the doctor directs you to go ahead and give the drug, be alert for symptoms of reaction.

ACTIVITY #8. Penicillins

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*amoxicillin trihydrate	Amoxil
*ampicillin	Omnipen
ampicillin sodium	Omnipen-N, Polycillin-N
*carbenicillin disodium	Geopen
carbenicillin indanyl sodium	Geocillin, Geopen Oral
cloxacillin sodium	Tegopen
dicloxacillin sodium	Dynapen
*methicillin sodium	Staphcillin
nafcillin sodium	Nafcil, Unipen
*penicillin G benzathine	Bicillin LA
penicillin G potassium	K-cillin, K-Pen Pentios
*penicillin G procaine	Duracillin, Wycillin
penicillin G sodium	Crystapen
penicillin V	V-Pen
penicillin V potassium	Pen-Vee-K

LEARNING ACTIVITIES - continued

The penicillins are antibiotics derived from a number of strains of penicillium notatum and penicillium chrysogenum, common molds often seen on bread or fruit. They were introduced into clinical practice in 1941 and comprise a large group of antimicrobial agents that remain the most effective and least toxic of all available antimicrobial drugs. Natural penicillins are expressed in units.

Major Uses

These drugs are highly effective against infections caused by gram positive cocci, such as Streptococcus pneumoniae and nonpenicillinase producing staphylococci, also effective against some gram negative cocci, such as Neisseria meningitidis and Neisseria gonorrhoeae. Penicillins are also effective in varying degrees against Bacillus anthracis, Clostridium perfringens, Treponema pallidum, Actinomyces and Corynebacterium diphtheriae. Penicillins are not active against viruses, mycobacteria, plasmodia, yeasts fungi or rickettsiae.

Mechanism of Action

Penicillins are relatively narrow spectrum drugs that are bactericidal for a wide variety of gram positive and some gram negative organisms.

Side Effect

1. Nausea
2. Vomiting
3. Diarrhea
4. Superimposed infections
5. Rash
6. Hives
7. Urticaria
8. Anaphylactic shock
    a. Pallor
    b. Diaphoresis
    c. Hypotension
    d. Dyspnea
    e. Unconsciousness
    f. Laryngeal edema
    g. Circulatory collapse

LEARNING ACTIVITIES - continued

Nursing Considerations

1. A complete allergy history should be taken. A cross allergic reaction may occur in patients who are allergic to cephalosporins. Notify the doctor of the allergy before giving the drug.

2. Discharge teaching should include:

   a. Taking the medication as prescribed.

   b. Watching side effects that may indicate possible anaphylactic shock.

   c. Taking all of the medication, even if the symptoms of the disease disappear.

   d. Not to share, give or borrow.

3. Some of the penicillin drugs come in a powdered form that may be reconstituted. To reconstitute, check the bottle, insert or PDR for the type and amount of dilutent. After the drug has been reconstituted, mark the bottle with the date, number of units/ml and amount of dilutent, then refrigerate.

4. The penicillins are not useful in the presence of bacterial producing enzymes capable of destroying penicillins. These enzymes are called Penicillinase.

ACTIVITY #9. Sulfonamides

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*co-trimoxazole (Sulfamethoxazole-trimethoprim)	Bactrim; Bactrim DS; Septra Septra DS
sulfacytine	Renoquid
sulfameter	
*sulfamethizole	Sulfasol
*sulfamethoxazole	Gantanol
sulfasalazine	Azulfidine
*sulfisoxazole	Gantrisin
sulfamerazine	Sulla

The sulfonamides were the first effective nonantibiotic antibacterial agents in safe therapeutic dosage ranges and were the mainstay of antimicrobial therapy before the penicillins were introduced. All of the sulfonamides used therapeutically are synthetically produced.

LEARNING ACTIVITIES - continued

Major Uses

1. To treat urinary tract infections.

2. As prophylaxis for rheumatic heart disease in patients allergic to penicillin.

3. To provide pre and postoperative suppression of bowel flora and in the treatment of ulcerative colitis.

4. As an adjunct in the treatment of toxoplasmosis (a disease due to infection with protozoa -Toxoplasma gondii).

5. To treat dermatitis herpetiformis (Sulfapyridine).

Mechanism of Action

The sulfonamides are primarily bacteriostatic in concentrations that are normally useful in controlling infections in the human being. The drugs act by interfering with metabolism of folic acid, a substance needed by the bacteria to survive. When this happens, growth and multiplication are inhibited.

Side Effects

1. Blood dyscrasias
2. GI disturbances
    a. Nausea
    b. Vomiting
    c. Diarrhea
3. CNS disturbances
    a. Headache
    b. Tinnitus
    c. Fatigue
    d. Weakness
4. Allergic reaction
5. Overgrowth of nonsusceptible microorganisms

LEARNING ACTIVITIES - continued

6. Urinary tract disturbances such as:
    a. Crystalluria.
    b. Hematuria.
    c. Obstruction due to the insolubility of many sulfonamides in acid urine.

Nursing Considerations

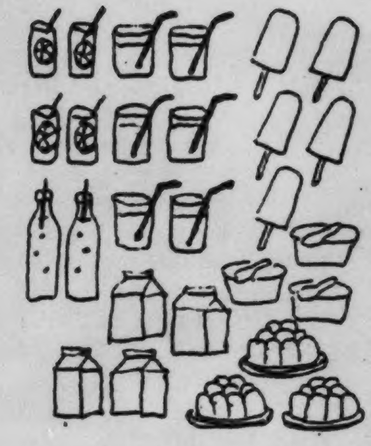
1. Fluid intake should be adjusted to support a urinary output of at least 1500 cc/day to prevent crystalluria and stone formation. Monitor pH and report increasing acidity. If urine output is inadequate or urine is highly acidic, physician may prescribe a urinary alkalinizer.

   Example: Sodium bicarbonate

2. Discharge teaching should include:
    a. An explanation of side effects in terms of what symptoms to be alert for:
        (1) Fever
        (2) Sore throat
        (3) Malaise
        (4) Unusual fatigue
        (5) Joint pain
        (6) Pallor
        (7) Bleeding tendencies
        (8) Rash
        (9) Jaundice
    b. The need for adequate fluid intake.
    c. The importance of medical followup.
    d. The importance of taking the drug as prescribed and not altering time or dose.

LEARNING ACTIVITIES - continued

3. To encourage children to take fluids, draw a scorecard using various symbols to represent fluids: soda bottles, Popsicles, ice cream, jello, milk and water. After taking the fluid, the child colors the appropriate symbol on a scorecard.



Remember: Sulfonamides may cause serious renal toxicity (crystalluria, hematuria and obstruction). Monitor the patient's intake and output, encouraging fluid intake and visually examine the hospitalized patient's urine for crystals.

ACTIVITY #10. Urinary Tract Germicides

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*methamine hippurate	Hiprex, Urex
*methenamine mandelate	Mandelamine
methenamine-sulfosalicylate	Hexalet
methylene blue	MG Blue, Wright's stain
*nalidixic acid	NegGram
*nitrofurantoin	Furadantin, Macrodantin

Urinary tract germicides are antibacterial drugs that are concentrated in the renal tubules and other areas of the kidneys and bladder. These drugs do not reach effective serum levels for treating systemic infections. For this reason they can be thought of as locally acting antibacterial agents specifically for use in urinary tract infections.

Major Uses

Treatment of bacteriuria, pyelonephritis, pyelitis and cystitis.

Side Effects

1. Nausea
2. Vomiting
3. Diarrhea
4. Abdominal pain
5. Rashes

LEARNING ACTIVITIES - continued

Nursing Considerations

1. Methylene blue turns urine and stool blue-green.

2. Caution patients to avoid exposure to direct sunlight or ultra violet light while receiving NegGram due to photosensitivity reactions. Susceptible patients may continue to be photosensitive up to 3 months after termination of the drug.

3. Monitor intake and output. Urinary tract germicides are reportedly most effective when the fluid intake is maintained at 1500-2000 cc/day and urinary pH is kept at 5.5 or below. Increased urine volume (through increased fluid intake or diuretics) and a urinary pH over 5.5 significantly decrease the formaldehyde concentration in the urine that is essential for antibacterial action.

ACTIVITY #11. Tetracyclines

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*chlortetracycline HCL	Aureomycin
demeclocycline HCL	Declomycin
*doxycycline Hyclate	Vibramycin
*methacycline HCL	Rondomycin
minocycline HCL	Minocin
oxytetracycline HCL	Terramycin
*tetracycline HCL	Achromycin, Sumycin
tetracycline phosphate complex	Tetrex

The tetracyclines were introduced in 1948 and were the first truly broad-spectrum antibiotics.

Major Uses

1. Effective against many gram positive organisms that are resistant to penicillin.

2. Moderately effective against gram negative rods.

3. Effective in some anaerobic infections.

4. Alternative agents in the treatment of both gonorrhea and syphillis.

Mechanism of Action

The tetracyclines are bacteriostatic for many gram negative and gram positive organisms plus some protozoa and rickettsiae. These drugs work by preventing protein synthesis.

LEARNING ACTIVITIES - continued

Side Effects

1. Diarrhea (may be severe)
2. Gastric distress
3. Blood dyscrasias
4. Hypersensitivity to drug
5. Photosensitivity
6. Superimposed infections
    a. Mouth sores
    b. Black tongue
    c. Vaginal itch

Nursing Considerations

1. To enhance drug absorption, administer oral preparations of tetracycline on an empty stomach at least one hour before or two hours after eating. However, if nausea, anorexia or diarrhea occurs, tetracyclines can be administered with food that is not high in calcium.

2. Antacids that contain aluminum, magnesium or calcium should not be administered with tetracyclines as they interfere with absorption by forming insoluble salts.

3. Advise patients to avoid exposure to direct or artificial sunlight during use of tetracyclines. Certain hypersensitive persons develop a phototoxic reaction (exaggerated sunburn) by exposure to the sun or ultraviolet light.

4. Tetracyclines are readily bound to calcium deposited in newly forming bone and teeth. Because of this, they should not be administered during pregnancy or to children under 12. A yellowish-grey-brown discoloration of the teeth may occur.

5. Tetracyclines decompose with age, exposure to light or with extreme humidity and heat. The resulting product may be toxic to the kidneys.

6. Tetracyclines may cause a false positive reading of clinitest; false negative reading of clinistix or testape.

LEARNING ACTIVITIES - continued

ACTIVITY #12. The Macrolides

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
clindamycin HCL	Cleocin
clindamycin palmitate HCL	Cleocin
clindamycin phosphate	Cleocin
*erythromycin base	E-Mycin
*erythromycin estolate	Ilosone
erythromycin ethyl succinate	Erythrocin
erythomycin gluceptate	Ilotycin
erythromycin lactobionate	Erythrocin
erythromycin stearate	Erythrocin
lincomycin HCL	Lincocin
troleandomycin phosphate	TAO

The macrolide antibiotics (except for lincomycin and clindamycin) were first introduced in the early 1950's. Lincomycin and clindamycin did not become available until the early 1960's.

Major Uses

1. The macrolides are effective against gram positive cocci, especially pneumococci, streptococci, staphylococci and Corynebacterium, Neisseria, Haemophilus and mycoplasma.
2. These drugs are also useful as penicillin substitutes for persons allergic to penicillin.

Mechanism of Action

These drugs are bacteriostatic because they inhibit protein synthesis. In high concentrations they may be bactericidal.

Side Effects

1. GI disturbances
    a. Nausea
    b. Vomiting
    c. Diarrhea
2. Allergic reactions may occur.
3. Hepatotoxicity with Ilosone and TAO

LEARNING ACTIVITIES - continued

Nursing Considerations

1. Activity of erythromycin may be decreased in acid medium and by the presence of food in the stomach. Therefore, these drugs should be administered on an empty stomach one hour before or three hours after meals. These meds should not be given immediately before or after fruit juice.

ACTIVITY #13. Miscellaneous Antibiotics

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
*amantadine HCL	Symmetrel
*bacitracin	
*chloramphenicol palmitate	Chloromycetin
chloramphenicol sodium succinate	Chloromycetin
*colistimethate sodium	Coly-Mycin, Colistin Sulfate
furazolidone	Furoxone
novobiocin sodium	Albamycin
novobiocin calcium	Albamycin
*polymyxin B sulfate	Aerosporin
spectinomycin dihydrochloride	Trobicin
vancomycin HCL	Vancocin
*vidarabine monohydrate	Vira A

These drugs have a lethal and/or inhibiting effect on a variety of infective agents, primarily bacterial. Only the drugs that are starred will have information available below. Information regarding the other drugs may be found in the PDR.

Major Uses

1. Amantadine - (Symmetrel) prevention of A_2 influenza.
2. Bacitracin - primarily used for the topical treatment of infections of the skin and wounds and of suppurative conjunctivitis.
3. Chloramphenicol - (Chloromycetin) typhoid fever and other salmonellas; occasional gram negative bacteria expected to be resistant to other drugs, severe rickettsial infections.
4. Colistimethate sodium - (Coly-mycin) and polymixin B sulfate (Aerosporin) used in treatment of pseudomonas infections resistant to other antimicrobial drugs; bacillary dysentery.

LEARNING ACTIVITIES - continued

Side Effects

1. Amantadine HCL - Symmetrel
    a. CNS disturbances
        (1) Hyperexcitability
        (2) Insomnia
        (3) Slurred speech
        (4) Vertigo
        (5) Ataxia
2. Bacitracin
    a. Marked nephrotoxicity if absorbed systemically
3. Chloramphenicol (Chloromycetin)
    a. Blood dyscrasias
        (1) Bone marrow depression
        (2) Anemia
        (3) Leukopenia
    b. GI disturbance
    c. Optic neuritis
4. Colistimethate sodium (Coly-mycin) and polymixin B (Aerosporin)
    a. Renal damage
    b. Peripheral neuropathy
    c. Respiratory arrest

Nursing Consideratons

1. Amantadine Symmetril HCL is recommended in the presence of documented influenza A_2 epidemic for high-risk patients. The drug should not be given to pregnant women.
2. With usage of chloramphenicol (Chloromycetin) frequent blood count studies should be performed and the nurse should monitor. The drug should be discontinued if agranulocytosis, leukopenia or thrombocytopenia appears.

LEARNING ACTIVITIES - continued

ACTIVITY #14. Review Exercises

Directions: Complete the following questions. Answers may be found by reviewing this module or using the PDR.

1. Give an example of a narrow spectrum antibiotic: ____________________

   Give an example of a broad spectrum antibiotic: ____________________

   Give an example of a moderate spectrum antibiotic: ____________________

2. In your own words, define bacteriostatic and bactericidal.

   ____

   ____

   ____

   ____

   ____

3. Organisms that have become insensitive to antibiotic therapy may create new infections called: ______________________________ Traditionally, the culprits behind these secondary infections have been ______________________________ bacteria.

4. Improvement of an infectious disease process after antibiotic therapy has been started, may be indicated by:

   a. ____

   b. ____

   c. ____

   d. ____

   e. ____

LEARNING ACTIVITIES - continued

5. List the usual dosages and routes for the following drugs:

	DOSAGE	ROUTE
a. Amphotericin B:		
b. Amodiaquine HCL:		
c. Rifampin:		
d. Gentamicin sulfate:		
e. Duricef:		
f. Carbenicillin disodium:		
g. Gantanol:		
h. Macrodantin:		
i. Vibramycin:		
j. Ilosone:		
k. Chloromycetin:		

6. What discharge instructions would you give to patients going home on the following medications?

   a. Keflex 500 mg po Q6hrs:

   b. Tetracycline 250 mg po QID:

   c. Neg Gram 1 gm po QIDx7 days:

   d. Bactrium DS BID po:

LEARNING ACTIVITIES - continued

e. Ampicillin 500 mg po Q4hrs: ____________________

____

____

f. Neomycin sulfate 1 gm QIDx5 days: ____________________

____

____

g. INH 300 mg po QD: ____________________

____

____

h. Mycostatin oral suspension 5 gtts QID: ____________________

____

____

7. The doctor has ordered: Keflin 500 mg IM Q6hrs. You are provided with a one gram bottle that contains the following information for reconstitution:

   For IM use add 2 ml sterile water to give you a total volume of 2.8 cc.

   How many cc's will you give? ____________________

8. Discuss indiscriminate usage of antibiotics:

LEARNING ACTIVITIES - concluded

ACTIVITY #15. How Calculating Are You?

Directions: Complete the following problems, showing your work, and turn in to your instructor at the beginning of the lecture "Drugs Used in the Treatment of Infectious Diseases."

1. 1.01 X 3.05 =
2. $3\overline{)1.8}$
3. $\ddot{\overline{\text{ss}}}$ ʒ = ____cc
4. 120 grain = ____grams
5. Tedral Elixir 5 ml = ____cc = ____tsp. = ____ʒ
6. Percodan 5 mg = ____grams = ____grains
7. Dramamine 50 mg = ____grams = ____grains
8. Mandelamine 1 gm = ____mg = ____grains
9. Meprobamate 200 mg = ____grams = ____grains
10. IV - 1000 cc to run in over 5 hours. Drip chamber delivers 15 gtts/cc. ____cc/hr. ____gtts/min.
11. On hand - 0.25 mg tabs
    Ordered: 0.125 mg
12. Dose ordered: grains 1/32
    On hand - grains 1/20 in 1 cc
13. Dose ordered: 7,200 units
    On hand - 8,500 units/1 cc
14. Dose ordered: grains 1/500
    On hand - grains 1/200 in 1 cc
15. Dose ordered: grains 1$\ddot{\overline{\text{ss}}}$
    On hand - 0.2 grams in 1 cc
16. Dose ordered: grains 1$\ddot{\overline{\text{ss}}}$
    On hand - 50 mg in 1 cc

PHARMACOLOGY

Module L, Part II - Medications Used in the Treatment of Allergic Disorders

RATIONALE

In order to provide optimal nursing care you must know how to prepare and administer medications to a patient with allergic disorders and you must understand how these medications can affect the patient.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the classification of drugs commonly used in the treatment of allergic disorders.
2. Identify side effects of drugs commonly used in the treatment of allergic disorders.
3. Identify nursing considerations that relate to the administration of drugs used in the treatment of allergic disorders.
4. Identify major uses for selected drugs in the treatment of allergic disorders.
5. Identify the role of histamine with the body.
6. Identify the differences between natural and acquired immunity and passive and active immunity.
7. Calculate and convert dosages for drug administration.
8. Demonstrate setup and administration of medication in the treatment of allergic disorders when given an assignment in the clinical area.

LEARNING ACTIVITIES

Directions: All of the information needed to complete Module L and to pass the test is included in this module and the PDR. Exercises have been designed to help you learn the material and focus on areas not specifically included (such as recommended dosages for individual drugs).

Since so many medications are included in this module, an effort has been made to simplify your study for the test by placing a star next to the more common drugs that may be included on the test.

You will better understand these drugs if you first complete Module 17-L, "Nursing Care for Patients with Allergic Conditions."

LEARNING ACTIVITIES - continued

Remember: Much of the information relating to these drugs is generalized and based upon the classification of the drug. Therefore, when giving a drug, LOOK UP EACH DRUG for its specific side effects, nursing considerations, actions, uses and dosages.

Good Luck!

ACTIVITY #1. Antihistamines

Directions: Read the following.

GENERIC NAMES	TRADE NAMES
H_1 Antagonists:	
*brompheniramine maleate	Dimetane
carbinoxamine maleate	Clistin R-A
*chlorpheniramine maleate	Chlor-trimeton, Teldrin
*cyproheptadine hydrochloride	Periactin
dexchlorpheniramine maleate	Polaramine
dimethothiazine mesylate	Promaquid
*diphenhydramine hydrochloride	Benadryl
diphenylpyraline hydrochloride	Diafen, Hispril
doxylamine succinate	Decapryn
methapyrilene hydrochloride	Allergin, Histadyl
promethazine hydrochloride	Phenergan
trimeprazine tartrate	Temaril
tripelennamine hydrochloride	Pyribenzamine
triprolidine hydrochloride	Actidil
H_2 Antagonist:	
*cimetidine	Tagamet

Histamine is a substance produced by the breakdown of histidine, a common amino acid derived from protein that occurs naturally in the body. Histamine is found in all body tissues. It is released and exerts a pharmacological action when tissues are injured. Symptoms of this release are those associated with allergic reactions, including rhinitis, hay fever, eczema, contact dermatitis, nausea, vomiting and urticaria. Antihistamines reduce or prevent the effect of this histamine release.

Based upon their action at receptor sites, antihistamines fall into two categories:

1. H_1 receptor antagonists (H_1 blocking agents. H_1 receptor antagonists are useful in the treatment of seasonal hay fever, allergic rhinitis, perennial vasomotor rhinitis, urticaria, certain allergic dermatoses and pruritis. They provide little relief for the common cold (although rhinorrhea may be helped) and provide no benefit in bronchial asthma or systemic anaphylaxis.

LEARNING ACTIVITIES - continued

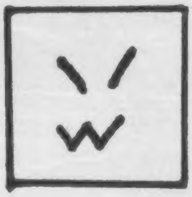
2. H_2 receptor antagonists (H_2 blocking agents). H_2 receptor antagonists are useful in the treatment of peptic ulcer, in which pain is reduced and healing promoted by inhibition of gastric acid production.

Major Uses

1. Symptomatic relief of allergic rhinitis and conjunctivitis.
2. Treatment of mild, uncomplicated urticaria or pruritus resulting from allergic dermatoses.
3. Treatment of minor allergic reactions to drugs and blood or plasma.
4. Adjunctive therapy in anaphylaxis.
5. Sedation.
6. Prevention of motion sickness.

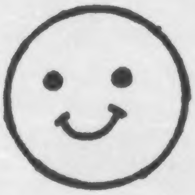
Mechanism of Action

Antihistamines are medications used to prevent the effects of histamines. They are thought to work by competing for the receptor sites that the histamines would occupy and instead occupy these sites themselves. Please read on.

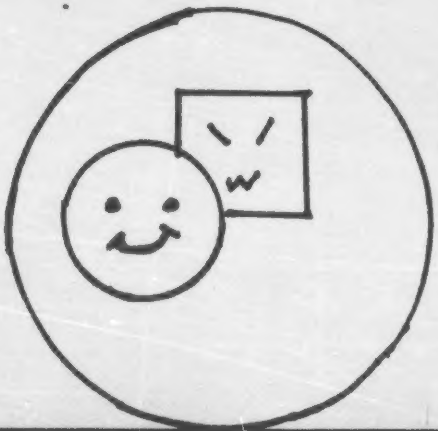


Substances foreign to the body are called ANTIGENS.

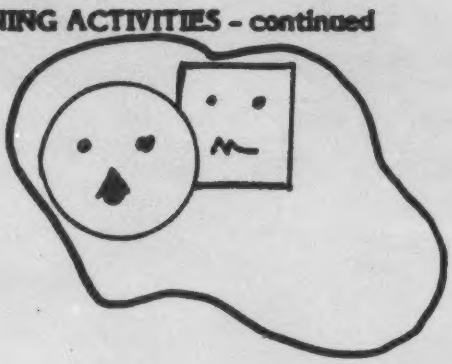
When these ANTIGENS enter the body they trigger the formation of ANTIBODIES.



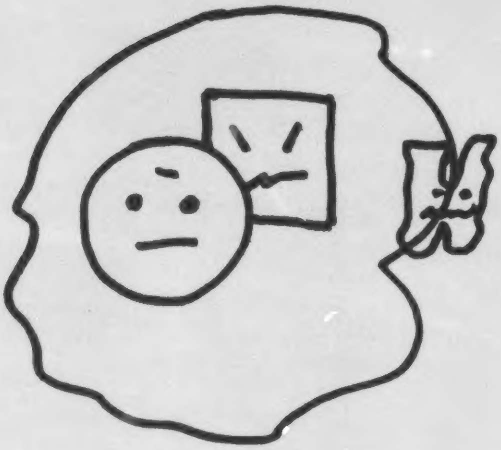
ANTIBODIES are believed to neutralize the effect of ANTIGENS.

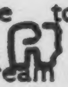


LEARNING ACTIVITIES - continued

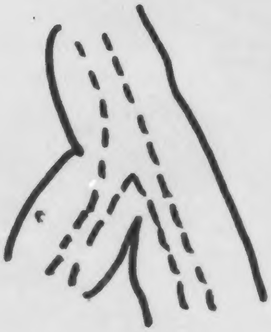


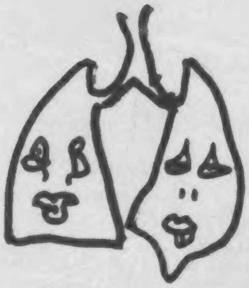
In the allergic individual, however, these ANTIBODIES and ANTIGENS sometimes combine and the ANTIGENS are not neutralized. When this occurs, the ANTIBODY-ANTIGEN reaction causes damage to cells and tissue.



In response to this damage, HISTAMINE  is released into the bloodstream and thus a series of reactions may begin.

One of these reactions is vasodilation of the arterioles. This vasodilation can lead to congestion in the capillary beds resulting in tissue edema. And with tissue edema you may see symptoms such as wheals, headache, nasal congestions, laryngeal edema and decreased blood pressure.

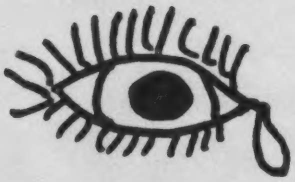




Another reaction may be contraction of the smooth walls of the bronchioles, which would interfere with the lungs' ability to function — efficiently - thus wheezing.

LEARNING ACTIVITIES - continued

Still another effect may be stimulation of the exocrine glands in the GI system, causing secretion of gastric juices high in acidity. This may also produce nausea, vomiting and diarrhea, which precede anaphylactic reaction in cases of allergy.



And finally stimulation of the exocrine gland activates the lacrimal gland that produces tearing.

ANTIHISTAMINES are drugs that prevent some of these histamine effects.

Side Effects

Drowsiness that may progress to deep sleep, dizziness, dry mouth, nausea, disturbed coordination, lassitude, muscular weakness, GI disturbances, blood dyscrasias.

Sedation may disappear after two or three days of treatment. In some patients, symptoms of excitation such as insomnia, nervousness and convulsions may occur.

Nursing Considerations

1. GI side effects may be reduced considerably if the drug is taken with meals or a glass of milk.
2. Patient should be warned not to drive or engage in hazardous activities due to the sedation effect of the drug until sure that alertness and muscle coordination are not impaired by the drug's action.
3. Barbiturates, tranquilizers and alcohol should not be taken while antihistamines are being administered, since they are also CNS depressants and may increase the depressant effects of the drug.

LEARNING ACTIVITIES - continued

4. In children especially, a contrasting stimulant effect may be seen instead of the usual depressant effect. The child may become excited, nervous and suffer from insomnia. For these reasons, caution should be used in giving these drugs to children.

5. Antihistamines that have an atropinelike, or drying effect, should not be given to patients with narrow angle glaucoma, prostatic hypertrophy, stenosing peptic ulcer, pyloroduodenal obstruction or bladder neck obstruction as adverse effects may be produced.

6. Different antihistamines are either more or less effective in different persons. Thus, if one drug provides an unfavorable response, a different medication may provide a more favorable response.

7. Though the use of antihistamines for the treatment of the common cold is controversial, many over-the-counter remedies contain antihistamines.

ACTIVITY #2. Antitoxins and Antivenins

__Directions:__ Read the following.

TYPE	TREATMENT
*black widow spider antivenin	black widow spider bites
*botulism antitoxin	botulism
*crotaline antivenin, polyvalent	crotalid (rattlesnake) bite
diphtheria antitoxin, equine	diphtheria prevention & treatment
Micrurus fulvius antivenin	Eastern & Texas corral snake bite
tetanus antitoxin, equine (tat)	tetanus prophylaxis & treatment

Immunity may be natural or acquired. If an individual resists a disease that microbes growing in his/her tissues or toxins (poisons) of those microbes would cause, then that person is said to have NATURAL IMMUNITY. When natural immunity is not effective and organisms attack, live and grow, the body protects itself by preparing antibodies that are destructive to the particular organism making the attack. Immunity resulting from these antibodies is ACQUIRED IMMUNITY. PASSIVE IMMUNITY against certain disease is acquired when a person receives the blood serum of an animal or another person who has been actively immunized by injections with the specific organisms or toxins of those diseases.

Antitoxins and antivenins provide passive immunity to patients exposed to various toxins and venoms. These preparations are made from blood extracted from horses innoculated with specific toxins.

Major Uses

1. Prevention and treatment of bacterial toxin infections.

2. Treatment of symptoms caused by insect, spider and snake bite.

LEARNING ACTIVITIES - continued

Mechanism of Action

Passive immunity is acquired by the transfer of antibodies formed in the blood of horses innoculated with specific toxins. When these antitoxins and antivenins are injected into other individuals, the toxins and venins become bound and neutralized.

Side Effects

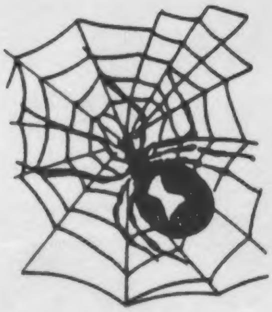
1. Hypersensitivity
2. Anaphylaxis
3. Serum sickness
    a. Urticaria
    b. Pruritus
    c. Fever
    d. Malaise
    e. Arthralgia

Nursing Considerations

1. It is important to obtain an accurate patient history of past reactions to immunization and allergies, especially to horses.

SPIDER BITES

Black widow spider bites may go unnoticed until severe pain at the puncture site and intense cramping abdominal pain strike the victim 10 to 14 minutes later. Since no lab test can detect the cause, a diagnosis must be made clinically. When taking a history, ask the patient if he/she has recently been in a lumber or junk pile, an outdoor privy or an old barn, garage or basement. Black widow spiders may inhabit any of these places.



LEARNING ACTIVITIES - continued

Ways to recognize symptoms of spider bites.

1. Spider bite victims may suffer spasmodic muscle pain in the:
   a. Legs.
   b. Chest.
   c. Back.
2. At the puncture site you will see:
   a. Two tiny red spots.
   b. Slight swelling.
   c. Urticaria.
3. The patient will experience:
   a. Weakness.
   b. Nausea.
   c. Fever.
   d. Chills.
   e. Rigid abdomen with diminished bowel sounds.
4. The patient will have:
   a. Elevated blood pressure.
   b. Labored breathing.
   c. Profuse sweating.
   d. Numb or tingling feet.
5. Small children may suffer:
   a. Delirium.
   b. Convulsions.

ACTIVITY #3. Immune Serums

Directions: Read the following.

GENERIC NAMES	TRADE NAME	SPECIFIC USE
Antirabies serum, equine		Rabies exposure
Hepatitis B immune globulin, human	H-Big	Hepatitis B exposure
*Immune serumglobulin	D-Immune, Gamastan, Immu-G, Immuglobin, etc.	Agammaglobulinemia, hypogammaglobulinemia, hepatitis A exposure, serum hepatitis posttransfusion, measle exposure, modification or complications, poliomyelitis exposure, chicken pox exposure, rubella exposure in 1st trimester of pregnancy.
Mumps immune globulin, human	Hyparotin	Mumps exposure and complications
Pertussis immune globulin, human	Hypertussis	Pertussis exposure and therapy
Rabies immune globulin, human	Hyperab	Rabies exposure
Rho(D) immune globulin, human	Rhogam	Rh exposure, transfusion accidents, postabortion or miscarriage to prevent Rh antibody formation
Tetanus immune globulin	A-Tet, Immu-Tetanus, etc.	Tetanus exposure and treatment

Immune serums provide passive immunity against various infectious diseases or suppress antibody formation as in Rh incompatibility. Immune serum globulins are obtained from hyperimmunized donors or pooled plasma. These products are then purified and standardized. Immune serums are effective for prophylaxis. They are not effective after the onset of the disease.

LEARNING ACTIVITIES - continued

Major Uses

1. Prevention of various infectious diseases.
2. Modification of disease symptoms in patients after suspected exposure.
3. Prevention of formation of active antibodies, as in Rho negative D^u negative mothers who deliver Rho positive or D^u positive infants or in transfusion accidents. See diagram below.

Rh Isoimmunization

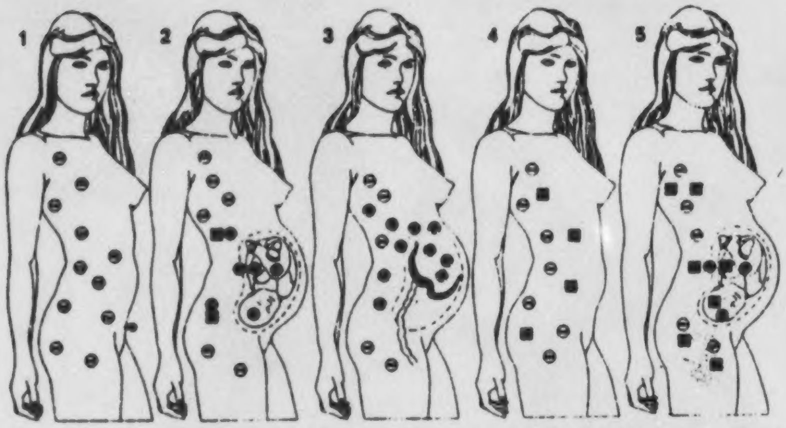


Fig. 1) Rh-negative woman prepregnancy. Fig. 2) Pregnancy with Rh-positive fetus. Fig. 3) Placental separation. 4) Postdelivery, mother becomes sensitized to Rh-positive blood and develops anti-Rh-positive antibodies (darkened squares). Fig. 5) During next pregnancy with Rh-positive fetus, maternal anti-Rh-positive antibodies enter fetal circulation, attach to Rh-positive red blood cells, and subject them to hemolysis.

Side Effects

1. Anaphylaxis
2. Pain at injection site
3. Urticaria
4. Fever

LEARNING ACTIVITIES - continued

Nursing Considerations

1. With RhoGam, the infant's cord blood should be immediately sent to the lab for analysis of blood type. RhoGam must be given within 72 hours after delivery or miscarriage.

2. With these drugs, it is important to obtain a thorough history of allergies and postreactions to immunizations.

3. For nursing personnel exposed to hepatitis B (by direct contact or needlestick), hepatitis B immune globulin should be given.

ACTIVITY #4. Vaccines and Toxoids

Directions: Read the following.

GENERIC NAMES	TRADE NAME	SPECIFIC USE
BCG vaccine		Tuberculosis exposure
Cholera vaccine		Primary immunization
Diphtheria & tetanus toxoids combined		Primary immunization
*Diphtheria & tetanus toxoids & pertussis vaccine (DP, DPT)	Triple Antigen; Triogen	Primary immunization
Diphtheria toxoid, absorbed, pediatric		Diphtheria immunization
Influenza virus vaccine, trivalent	Fluogen; Fluax	USSR, Texas & Hong Kong influenza prophylaxis
*Measles, mumps & rubella virus vaccine, live	MMR	Immunization
Measles (rubeola & rubella) virus vaccine, live attenuated	MR Vak	Immunization
Meningitis vaccines	Meningovac-C; Menomune-C	Meningococcal meningitis prophylaxis
Mumps vaccine, live attenuated	mumps vax	Immunization
Plague vaccine		Primary immunization & booster
*Pneumococcal vaccine, polyvalent	Pneumovax	Pneumococcal immunization
*Poliovirus vaccine, live, oral trivalent	Diplovax, Orimune	Poliovirus immunization
Rabies vaccine (duck embryo), dried, killed virus		Preexposure immunization and postexposure immunization

GENERIC NAMES	TRADE NAME	SPECIFIC USE
Rocky Mt. spotted fever vaccine		Rocky Mt. spotted fever (tick typhus) primary immunization
Rubella & mumps virus vaccine, live	Biavax	Measles & mumps immunization
Rubella virus vaccine, live attenuated	Cendevax, Meruvax	Measles immunization
Smallpox vaccine	Dryvax	Immunization
Staphylococcus toxoid		Prophylaxis & treatment of recurrent boils, carbuncle's postular acne
Tetanus toxoid	Tet Tox fluid	Primary immunization
Typhoid vaccine		Primary immunization
Typhus vaccine		Immunization against louse-borne epidemic typhus
Yellow fever vaccine		Primary vaccination

LEARNING ACTIVITIES - continued

Vaccines and toxoids provide active immunity against certain diseases of bacterial and viral origin. Vaccines contain killed or attenuated microorganisms that cause antibody formation. Toxoids contain exotoxins (substances formed by bacteria and secreted outside the bacterial cell). These substances are altered to make them nontoxic, but they retain the ability to stimulate antitoxin (antibody) formation.

Major Uses

1. Prevention of certain infectious diseases and childhood diseases such as:
    a. Mumps
    b. Measles
    c. Pertussis
    d. Poliomyelitis
2. Prevention of disease through injury or animal bites such as:
    a. Tetanus
    b. Rabies

Mechanism of Action

Initiate formation of specific antibodies by stimulating antigen-antibody mechanism, providing active or acquired immunity.

Side Effects

1. Chills
2. Fever
3. Malaise
4. Anaphylaxis
5. Local reaction

Nursing Considerations

1. An accurate patient history must be obtained including past reactions to immunizations.
2. Keep epinephrine 1:1000 available in case of adverse effects.
3. Treat fever with antipyretics.
4. Refer to immunization recommendations on the next page.

IMMUNIZATION RECOMMENDATIONS

Disease	Immunizing Agent	Preferred Age for Initial Dose	Number of Doses	Interval for Doses	Booster
Diphtheria Tetanus Pertussis	Diphtheria toxoid Tetanus toxoid, & Pertussis vaccine combined (DPT)	3 months	3	4-6 weeks	DPT 1 yr later & 4-5 yrs later; DT every 10 yrs thereafter
Tetanus Diphtheria	Tetanus & Diphtheria toxoid (TD)	6 yrs & older	2	4-6 weeks	1 yr later & every 10 years thereafter
Poliomeylitis	Live oral polio virus vaccine, trivalent	2-3 months	4	6-8 wks for 2nd & 3rd doses; 15-18 months for 4th	1 dose at entry into school
Measles (Rubeola)	Live measles vaccine	1 year	1		
Rubella	Live rubella vaccine	1 year	1		
Mumps	Live mumps vaccine	1 year	1		

LEARNING ACTIVITIES - continued

ACTIVITY #5. Review Exercise

Directions: Answer the following questions. Answers may be found by reviewing the material in this module and using the PDR.

1. ______________________, a substance found in all body tissues, is released and exerts its effects when body tissues are injured.

2. Name the two categories of antihistamines and the areas of the body each specifically works on:

   ______________________ ______________________

   ______________________ ______________________

3. Side effects of chlortrimeton, an antihistamine, may include which of the following: ______________________

a.	alopecia	f.	hirsutism
b.	rhinorrhea	g.	muscular weakness
c.	blood dyscrasias	h.	buffalo hump
d.	dry mouth	i.	dysmenorrhea
e.	GI disturbances	j.	drowsiness

4. Describe the difference between active immunity and passive immunity.

   ____

   ____

   ____

   ____

5. ______________________ and ______________________ provide passive immunity, while ______________________ and ______________________ provide active immunity.

6. The purpose of RhoGam is:

   ____

   ____

   ____

   ____

LEARNING ACTIVITIES - continued

7. Indicate usual dosages and routes for the following:

   a. Benadryl: ____________________ ____________________

   b. Phenergan: ____________________ ____________________

   c. Periactin: ____________________ ____________________

   d. BCG vaccine: ____________________ ____________________

   e. Polio vaccine ____________________ ____________________

8. What discharge instructions would you give to a patient going home on any of the following medications.

   a. Chlortrimeton 4 mg po TID: ____

   ____

   b. Cimetidine 300 mg po Q6hrs: ____

   ____

9. Six-week-old Candice Barr has just received a DPT shot at the Well-Baby Clinic. What information will you want to give Candice's mother?

   ____

   ____

   ____

   ____

ACTIVITY #6. How Calculating Are You?

Directions: Complete the following problems, showing your work, and turn in to your instructor at the beginning of the lecture "Drugs Used in the Treatment of Allergic Disorders."

1. 5.2 X 10.3 =
2. $5\overline{)\,1.2}$
3. 1ʒ = _____cc
4. 12 mg = _____grains
5. Lasix 40 mg = _____grams = _____grains
6. ACTH 40 units IM/cc = _____m = _____ml

LEARNING ACTIVITIES - concluded

7. Aventyl 10 mg = _____grams = _____grains

8. Elavil 25 mg = _____grams = _____grains

9. HCL ʒ ii = _____tsp. _____cc

10. IV - 500 cc to infuse in over 6 hours. Drip chamber delivers 15 gtts/cc
    _____cc/hr. _____gtts/min.

11. On hand - 7,500 units in 1 cc
    Ordered: 3000 units

12. Dose ordered: grains 1/600
    On hand - grains 1/500 in 1 cc

13. Dose ordered: 9,500 units
    On hand - 10,000 units/1 cc

14. Dose ordered: grams 1
    On hand - 0.5 gram tabs

15. Dose ordered: 1.5 grams
    On hand - 5 grams in 8 cc

16. Dose ordered: 0.050 grams
    On hand - 25 mg in 0.5 cc

POST TEST

Module A - Part II

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet.

1. Jacob Jones has rheumatoid arthritis for which he takes 10 grains of ASA p.r.n. Possible side effects include:

    1. tinnitus
    2. GI bleeding
    3. hirsutism
    4. edema

    a. 2, 4
    b. 2, 3
    c. 1, 2
    d. all are correct

2. Because of the side effects encountered with musculoskeletal drugs, the best time to give them is:

    a. with meals or immediately after meals.
    b. at 1000, 1400 and HS.
    c. 1/2 hr. before meals.

3. Your patient, Mr. Beyer, is receiving Zyloprim for his gout. Which lab test would help you assess its effectiveness?

    a. hemoglobin
    b. uric acid
    c. clotting time
    d. WBC

SITUATION:

You are assigned to care for a male patient who injured his back falling off a ladder. In doing your assessment, you discover that he has mild osteoarthritis of the hands, glaucoma and has been taking diuretics for his hypertension and anticoagulants since his heart attack several months ago. He likes to have a beer or two in the evenings while visiting with his wife who is bedridden.

4. The doctor orders ASA. You are concerned because it:

    a. may cause acid indigestion and cause an ulcer.
    b. may complicate his glaucoma.
    c. will affect his anticoagulant therapy.

POST TEST - continued

5. The doctor ordered aspirin 10 gr. The tablets are marked 325 mg. How many will you give?

   a. 2 1/2
   b. 2
   c. 1 1/2
   d. 1

6. A drug that is a uricosuric agent and may be used in the treatment of gout and also to increase antibiotic concentrations is:

   a. Anturane
   b. Zyloprim
   c. Aspirin
   d. Deltasone

7. When administering benemid (Probenecid) to a patient, the nurse should keep in mind that:

   1. if the patient is diabetic, clinistix or testape should be used instead of the clinitest tabs.
   2. the consumption of alcohol should be discouraged.
   3. the drug is best given with food, milk or antacid.
   4. drowsiness may initially be a problem.

   a. 1, 2, 3
   b. 2, 3, 4
   c. 1, 3, 4
   d. all are correct

8. One drug useful in the treatment of spasticity from CNS disorders and multiple sclerosis is:

   a. Aspirin
   b. Robaxin
   c. Anectine
   d. Dantrium

9. The administration of the drug Anectine (succinylcholine chloride):

   a. is usually oral.
   b. should include taking an apical pulse prior to administration.
   c. should include the precaution of having emergency respiratory support available.

10. A group of drugs that depresses transmission of nerve impulses from the spinal cord to the skeletal muscles is:

   a. corticosteroids
   b. analgesics
   c. diuretics
   d. skeletal muscle relaxants

POST TEST - continued

11. A group of drugs that depresses the peripheral chemoreceptors to block pain impulses is:
    a. uricosuric agents
    b. skeletal muscle relaxants
    c. analgesics
    d. antipyretics

12. A group of drugs used in disorders involving the musculoskeletal system for the anti-inflammatory effect they exert is:
    a. antipyretics
    b. analgesics
    c. corticosteroids
    d. diuretics

13. Drugs that may mask or exacerbate infections are:
    a. analgesics
    b. corticosteroids
    c. uricosuric agents
    d. skeletal muscle relaxants

14. A drug for IM injection containing 50% gold and used in the treatment of rheumatoid arthritis is:
    a. Motrin
    b. Solganol
    c. Indocin
    d. Clinoril

15. Two frequently used skeletal muscle relaxants are:
    a. Robaxin and Decadron
    b. Dantrium and Robaxin
    c. Medrol and Benemid
    d. Zyloprim and Dantrium

__Directions:__ Complete the following probems showing your work on the back of your answer sheet. Write your answers at the bottom of the answer sheet.

16. IV - 1000 cc to run in 12 hours. The drip chamber delivers 10 gtts/cc
    How many cc/hr?
    How many gtts/min?

17. Dose ordered 75 mg
    On hand 100 mg in 5 cc

18. Dose ordered 50 mg
    On hand 75 mg in 1 cc

POST TEST - concluded

19. Dose ordered grain 1/500
    On hand grain 1/400 in 1 cc

20. Dose ordered 30 mgm
    On hand 25 mgm in 1 cc

ANSWERS TO POST TEST

Module A - Part II

1. c
2. a
3. b
4. c
5. b
6. a
7. a
8. d
9. c
10. d
11. c
12. c
13. b
14. b
15. b
16. 83-14
17. 3.8
18. .7
19. .8
20. 1.2

POST TEST

Module B - Part II

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. Drugs that work by causing relaxation of the smooth muscles, resulting in vasodilatation and thus increasing blood flow to the extremities and the brain, are classified as:

   a. hematinics
   b. vasodilators
   c. antihypertensives
   d. vasoconstrictors

2. Nitroglycerin is available in:

   a. sublingual tablets
   b. timed-release capsules
   c. ointment
   d. all are correct

3. Signs of digitalis toxicity include:

   a. anorexia, nausea, vomiting and abdominal discomfort
   b. restlessness, facial pain, headache, irritability and fatigue
   c. blurry vision, flickering lights, yellow and green halos around objects
   d. a, c
   e. all are correct

4. A food that would be included in the diet of someone wanting to restrict cholesterol and triglycerides would be:

   a. sour cream and baked potato
   b. angel food cake
   c. bacon and eggs
   d. toasted cheese sandwich

POST TEST - continued

5. Anatalia de la Tierra has been taking Coumadin 2.5 mg at home for the past 6 months following replacement of her mitral valve. Which side effects are possible with usage of this drug?

    1. leukopenia
    2. petechiae
    3. glycosuria
    4. epistaxis
    5. melena

    a. 1, 2, 3, 4
    b. 1, 2, 4, 5
    c. 1, 3, 4, 5
    d. all are correct

6. To give 0.125 mg of Lanoxin IM, you will give how many cc's. You have Lanoxin 0.5 mg in 2 cc.

    a. 2.5
    b. 0.5
    c. 0.25
    d. 1 cc

7. To give 6000 units of Heparin, you will give how many cc's. On hand you have Heparin 10,000 units/1 cc.

    a. 9 minims
    b. 0.9 cc
    c. 0.6 cc
    d. 13 minims

8. A drug that is used to neutralize the effects of Heparin is:

    a. vitamin K
    b. protamine zinc
    c. vitamin E
    d. protamine sulfate

9. With the usage of Coumadin, which lab test indicates if coagulation has been achieved?

    a. PT
    b. CBC
    c. PTT
    d. reticulocyte count

POST TEST - continued

10. Andy Tender has angina for which his doctor has ordered Nitro-Bid Paste 2% 1 1/2 inches Q6hrs. Which statement(s) are true?

    a. Nitro-Bid Paste is measured on dose papers and should not be touched with fingers.
    b. After application of the paste, the patient should be instructed to rub it in thoroughly, so as to aid in vasodilation.
    c. This ointment should only be used when angina attacks occur or prior to engaging in activities that cause angina.
    d. a, b
    e. all are correct

11. The primary use for antilipemics is:

    a in the treatment of heart disease due to atherosclerosis.
    b. in the treatment of hypolipoproteinemia.
    c. in the treatment of hyperlipoproteinemia.

12. Three different methods of treating the heart when normal conduction has been altered are available. These include:

    a. antiarrhythmic drugs, electrocardioversion and electrical pacemaker.
    b. cardiotonic glycosides, electrocardioversion and electrical pacemaker.
    c. vasopressors, defibrillation and electrical pacemakers.
    d. vasodilators, defibrillation and electrical pacemakers.

13. In the administration of any digitalis derivative to a patient, which statement(s) would be true?

    a. Always take an apical/radial pulse for at least 15 seconds.
    b. Hold the medication and notify the doctor if the pulse is less than 60 beats per minute.
    c. Digitalization has been achieved when the patient experiences signs of digitalis toxicity.
    d. a, b
    e. b, c
    f. all are correct

14. Agents usually prescribed only when dietary measures have not been successful are:

    a. antiarrhythmics
    b. vasodilators
    c. cardiotonic glycosides
    d. antilipemics

POST TEST - continued

15. Cardiotonic glycosides, such as digoxin (Lanoxin) are used to:

    a. slow the heart rate.
    b. strengthen the heart muscle.
    c. improve the circulation.
    d. relieve edema through improved circulation.
    e. a, c, d
    f. all are correct

16. In the administration of ferrous gluconate (Fergon), the patient should know that:

    a. iron is toxic and should be kept out of the reach of children.
    b. best absorption of the drug occurs when the drug is taken between meals, but if nausea and vomiting occur, it may be taken with food.
    c. this drug is best taken at bedtime.
    d. this drug should not be taken with milk or antacids, as it interferes with absorption.
    e. a, b, d
    f. all are correct

17. When giving George, a 16-year-old, 120 lb, 5'6", an injection of Imferon, which of the following considerations would apply?

    1. Give this medication only Z track into the upper outer quadrant of the buttocks.
    2. Use a 25 or 26 gauge, 1/2 or 3/4 inch needle.
    3. Change the needle after this medication has been drawn up to avoid tracking medication through the subcutaneous tissue.
    4. Inform the patient that his stools may be dark green or black.
    5. Since diarrhea is a problem with this drug, the doctor may need to order an antidiarrheal.

    a. 1, 3
    b. 1, 3, 4
    c. 1, 2, 3, 4
    d. all are correct

18. Cyclospasmol, a drug that may be used in the treatment of Raynaud's disease:

    a. works to relax the smooth muscle of the blood vessels causing vasodilation and increasing blood flow to the extremities and brain.
    b. works by increasing the effects of epinephrine and nonepinephrine, increasing the heart rate, dilating the skeletal muscles, constricting the peripheral vessels, resulting in an elevation of blood pressure.
    c. decreases the impulse conduction of the AV (atrioventricular) node to slow the heart rate.
    d. increases conduction through the AV node to speed up the heart rate.

POST TEST - concluded

Directions: List the following medications according to their drug classification. (Please list answers on the bottom of your answer sheet.)

Drug Classifications

Antiarrhythmics	19.	______________	20.	______________
Anticoagulants	21.	______________	22.	______________
Antilipemics	23.	______________		
Cardiotonic glycosides	24.	______________	25.	______________
Hematinics	26.	______________	27.	______________
Vasodilators	28.	______________	29.	______________

Medications

Amyl Nitrate
clofibrate - Atromid-S
digitoxin - Crystodigin
dipyridamole - Persantine
ferrous sulfate - Feosol
gitalin - Gitaligin
Imferon
procainemide HCL - Pronestyl
protamine sulfate
quinidine gluconate - Quinaglute Duratabs
warfarin sodium - Coumadin

30. Iron is a metalic element, widely distributed in the body. It is found in the:

    a. hemoglobin of the red blood cells.
    b. hemoglobin of the platelets.
    c. white blood cells.
    d. leukocytes.

Directions: List at least five discharge instructions you would include for a patient going home on nitroglycerine 1/150 gr p.r.n. (Write your answers at the bottom of your answer sheet.)

31. ____

32. ____

33. ____

34. ____

35. ____

ANSWERS TO POST TEST

Module B - Part II

1. b
2. d
3. e
4. b
5. b
6. b
7. a, c
8. d
9. a
10. a
11. c
12. a
13. e
14. d
15. f
16. e
17. b
18. a
19. Pronestyl
20. Quinaglute Duratabs
21. Coumadin
22. Protamine sulfate
23. Atromid-s

ANSWERS TO POST TEST - concluded

24. Crystodigen

25. Gitalagin

26. Feosol

27. Imferon

28. Amyl nitrate

29. Persantine

30. A

31. Stop and lie down and put a nitroglycerine tablet gr 1/150 under the tongue.

32. Take up to 3 pills, one ever 10 min. for pain.

33. Don't drink alcohol without checking with the doctor.

34. Keep pills in original container with cotton removed.

35. Call the doctor immediately for any prolonged or severe pain, fainting and dizziness.

POST TEST

Module C - Part II

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet.

1. An expectorant that would be administered by straw and diluted is:

   a. ammonium chloride
   b. Robitussin
   c. terpin hydrate
   d. SSKI

2. You as a nurse might encourage the patient to participate in activities to make coughing more productive. They might include:

   1. postural drainage
   2. smoking
   3. shallow breathing activities
   4. adequate fluid intake

   a. 1, 3, 4
   b. 1, 4
   c. 4
   d. all are correct

3. Expectorants should be given:

   a. diluted
   b. with water
   c. with meals
   d. undiluted, between meals

4. A narcotic frequently found in cough medications is:

   a. codeine
   b. Demerol
   c. inapsine
   d. morphine

5. The doctors orders Robitussin ʒ ss. You will give:

   a. 15 cc
   b. 2 Tbs.
   c. 1 tsp.
   d. 7 1/2 cc

POST TEST - continued

6. In the sublingual administration of isoproterenol or Isuprel, the nurse:

   1. should instruct the patient to let the tablet dissolve under tongue without sucking or swallowing the saliva.
   2. may give the tablet rectally if the doctor orders.
   3. should advise the patient to rinse mouth with H_20 between doses because tablets can damage the teeth.

   a. 1
   b. 1, 3
   c. 1, 2
   d. all are correct

7. Which measures reduce the chance of a fatal error in the administration of epinephrine?

   1. Check the order on the medex against the doctor's written order.
   2. Check the prescribed concentration, dosage and route of the solution.
   3. Call the patient by name before administering the drug.

   a. 2
   b. 1, 2
   c. 2, 3
   d. all are correct

8. All are true about drug administration except:

   a. The physician is the only one responsible for a drug error.
   b. All medication orders must be signed by a physician.
   c. Each medication order must include the name of the drug, dose, route of administration.
   d. Know the abbreviations in prescription writing.
   e. Chart only those medications that you have administered.

9. The nurse on days had kindly prepared your 1530 medications for you. Knowing that the nurse is a very accurate individual, you should:

   a. check the medex against the doctor's order sheet and administer the drug as prepared.
   b. give the prepared medications at 1530.
   c. check the patient's supply to see if the right drug was obtained and administer the drugs as prepared.
   d. discard the drugs and prepare them yourself.

10. A group of drugs that depress or inhibit the cough reflex center of the medulla is called:

   a. expectorants
   b. antitussives
   c. mucolytics
   d. analeptics

POST TEST - concluded

11. Drugs that reduce the thickness and stickiness of purulent and nonpurulent pulmonary secretions are:

    a. expectorants
    b. antitussives
    c. mucolytics
    d. analeptics

12. A group of drugs that relaxes spasms of bronchi by decreasing muscle contractions and reducing swelling and congestion of mucous membranes is:

    a. xanthines (theophylline and derivatives)
    b. adrenergics (sympathomimetics)
    c. corticosteroids
    d. antitussives

Directions: List the medications at the bottom of the page according to their drug classification. (Please list answers on bottom of answer sheet.)

Drug Classifications

Respiratory Stimulants

13. ______________ 14. ______________

Expectorants and Antitussives

15. ______________ 16. ______________ 17. ______________

Xanthines (theophylline and derivatives)

18. ______________ 19. ______________

Adrenergics (sympathomimetics)

20. ______________ 21. ______________ 22. ______________

Corticosteroids

23. ______________ 24. ______________ 25. ______________

Medications

Solu-Cortef
Choledyl
Dopram
Tessalon
Robitussin
Aminophyllin
Brethine

Vanceril
ammonia aromatic spirits
Isuprel

SSKI
epinephrine - Susphrine
Medrol

ANSWERS TO POST TEST

Module C - Part II

1. d
2. b
3. d
4. a
5. a
6. d
7. b
8. a
9. d
10. b
11. c
12. a
13. Ammonia
14. Dopram
15. SSKI
16. Tessalon
17. Robitussin
18. Choledyl
19. Aminophylline
20. Isuprel
21. Epinephrine
22. Brethine
23. Vanceril
24. Medrol
25. Solu-Cortef

POST TEST

Module D - Part II

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

SITUATION:

Mr. Jordan, a 79-year-old man, has been admitted to the hospital with the diagnosis of abdominal pain. At home he had been taking milk of magnesia p.r.n. for constipation and sodium bicarbonate for indigestion. Recently, however, he was unable to purchase the MOM and had to go without. He then had an episode of diarrhea and started taking an old prescription of paregoric. He is now off all medications for evaluation of abdominal pain. Questions 1-6 refer to this situation.

1. Use of a systemic antacid such as sodium bicarbonate may cause:

   a. an excess of alkalai in the body.
   b. acid rebound.
   c. perforation of peptic ulcer.
   d. all are correct

2. Overuse of a laxative such as milk of magnesia (MOM) may lead to:

   1. anorexia.
   2. laxative dependency.
   3. jaundice.
   4. constipation or diarrhea.

   a. 2, 4
   b. 2, 3, 4
   c. 1, 2, 3
   d. all are correct

3. Prolonged use of tincture of opium (paregoric) may cause drowsiness and dizziness and lead to physical dependency.

   a. true
   b. false

POST TEST - continued

4. An upper and lower GI series indicates Mr. Jordan probably has an impaction. Patient teaching you could do to help this patient avoid constipation in the future might include encouraging Mr. Jordan:

   1. to drink at least 8-10 glasses of liquid a day.
   2. to eat foods that are highly refined such as spaghetti, noodles and ice cream.
   3. to get 6-8 hours of rest per night.
   4. not to engage in strenuous activity.

   a. 1, 3
   b. 1, 4
   c. 1, 3, 4
   d. all are correct

5. The doctor has ordered a barium enema to see if there is a problem in the lower colon. What drug may be used as part of the bowel prep for this test?

   a. probantheline bromide (Pro-Banthine)
   b. Emetine (Ipecac)
   c. senna (X-Prep)
   d. tincture of opium (paregoric)

6. Mr. Jordan is now ready for discharge. He has been placed on Metamucil 1 tsp. b.i.d. This medication is most appropriately taken:

   a. one hour AC to avoid interactions with food products.
   b. with minimal liquid so it will work effectively in the stomach.
   c. with both doses in the a.m. so the patient can sleep during the night without frequent trips to the bathroom.
   d. with a glass of water or juice, followed by another glass of liquid.

7. The doctor orders the patient to receive atropine 0.4 mg subcutaneously. You have on hand atropine 1 mg in 1 cc. How much will you give?

   a. 4 cc
   b. 40 mg
   c. 4 mg
   d. 0.4 cc

8. Mrs. Bracamonte started vomiting during the night and complained of dull, intermittent RLQ abdominal pain. She is to have X-Prep this a.m. as part of the prep for the barium enema tomorrow a.m. In this situation you should:

   a. give an antiemetic for the vomiting and then give the X-Prep as soon as Mrs. Bracamonte is able to retain fluids.
   b. forget about giving the X-Prep altogether because if she's been vomiting, she doesn't have anything in the colon anyway.
   c. give the X-Prep as soon as possible because of its antiemetic effect.
   d. hold the X-Prep because it shouldn't be given without the doctor's knowledge of the patient's condition.

POST TEST - continued

9. Anticholingerics are administered best:

    a. on an empty stomach.
    b. 30 minutes to one hour before meals.
    c. upon waking in the morning.
    d. 30 minutes to one hour after meals.

10. An antiemetic drug that should not be mixed with any other medication when given parenterally is:

    a. atropine.
    b. Probanthine.
    c. Illopan.
    d. Compazine.

11. A drug that must be given with a straw to prevent tooth decay is:

    a. milk of magnesia (MOM).
    b. syrup of Ipecac.
    c. hydrochloric acid (HCL).
    d. tincture of opium.

12. Atabrine (quinicrine HCL) dispells worms by loosening their organ of attachment from the intestine wall. This necessitates:

    a. the use of saline cathartics to clear the colon of the worms.
    b. the use of an emetic to clear the colon of the worms.

13. Drugs used in neutralizing gastric acidity and aiding in the control of pain from peptic ulcers are:

    a. adsorbents.
    b. laxatives.
    c. emetics.
    d. antacids.

14. Drugs used to promote digestion, constitute replacement therapy in deficiency states and to diminish intestinal gas in healthy persons are:

    a. adsorbents.
    b. emetics.
    c. digestants.
    d. antacids.

15. Medications given to produce symptomatic relief of nausea and vomiting are:

    a. emetics.
    b. adsorbents.
    c. absorbents.
    d. antiemetics.

POST TEST - concluded

16. A group of drugs used in combination with antacids that inhibit smooth muscle contraction by blocking the vagus nerve is:

    a. emetics.
    b. adsorbents.
    c. G.I. anticholinergics.
    d. anthelmintics.

Directions: List the medications at the bottom of the page according to their drug classification. Please write your answers on the spaces provided at the bottom of your answer sheets.

Drug Classifications

Antiflatulent 17. ________

Antacids 18. ________ 19. ________

Anthelmintics 20. ________

Antidiarrheals 21. ________ 22. ________

Digestants 23. ________

Emetics 24. ________

Antiemetics 25. ________ 26. ________ 27. ________

G I anticholinergics 28. ________

Laxatives 29 ________ 30. ________

Medications

Ipecac
Lomotil
Dramamine
Amphojel
Mylicon
Atrabrine
Tigan
Probanthine
paregoric
Riapan
Metamucil
hydrochloric acid
Compazine
Dulcolax

ANSWERS TO POST TEST

Module D - Part II

1. d
2. a
3. a
4. a
5. c
6. d
7. d
8. d
9. b
10. d
11. c
12. a
13. d
14. c
15. d
16. c
17. Mylicon
18. Riopan
19. Amphojel
20. Atabrine
21. paregoric
22. Lomotil
23. hydrochloric acid
24. Ipecac
25. Compazine
26. Tigan
27. Dramamine
28. Probanthine
29. Metamucil
30. Dulcolax

POST TEST

Module E - Part II

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. Metoprolol tartrate, an antihypertensive, requires that the patient's apical pulse be taken prior to administration and held if less than 60 beat/min. The trade name of this drug is:

   a. Catapres.
   b. Sintram.
   c. Diamox.
   d. Lopressor.

2. A loop diuretic, such as Lasix:

   a. requires routine checks of sodium and potassium levels due to the loss of these two electrolytes at the loop of Henle.
   b. routinely causes stomatitis and gastric distress and therefore should be taken with food or an antacid.
   c. is not very potent when used alone.
   d. inhibits the production of an enzyme, carbonic anhydrase, which allows for the excretion of water and sodium.

3. Keeping in mind that the doctor wants the patient to eat a diet high in potassium, which foods would be more appropriate for someone taking Hygroton, a thiazide diuretic?

   a. peaches and Brer Rabbit syrup
   b. shell fish and fried eggs
   c. orange juice and potato chips
   d. salted peanuts and bananas

4. A group of diuretics most commonly used to treat glaucoma, some cases of petit mal and grand mal epilepsy and premenstrual tension is:

   a. osmotic diuretics.
   b. thiazide diuretics.
   c. potassium sparing diuretics.
   d. carbonic anhydrase inhibitors.

POST TEST - continued

5. Two ways the doctor can assess that a patient is diuresing include an accurate I & O plus:

   a. a decrease in pitting edema.
   b. placing the patient on a low-sodium diet.
   c. daily weight.
   d. daily electrolytes.

6. Which discharge instructions would you give to someone going home on Lasix 40 mg QOD?

   a. Take this drug daily in the morning so that you will not be kept up during the night due to frequent urination.
   b. Notify your doctor of unusual problems, marked thirst or weakness.
   c. A potential problem with using this drug is loss of too much potassium, which may be demonstrated by muscle cramps or weakness, apathy, loss of appetite or vomiting.
   d. b, c
   e. all are correct

7. Three signs of hyponatremia would be:

   a. anemia, hypertension, stupor
   b. polycemia, hypotension, tachycardia
   c. bradycardia, hypotension, polyemia
   d. tachycardia, hypotension, oligemia

8. Lasix and Edecrin are potent diuretics and are classified as:

   a. osmotic diuretics
   b. potassium sparing diuretics
   c. loop diuretics
   d. thiazide diuretics

9. The doctor has ordered Lasix 80 mgm IM. You have on hand Lasix 40 mgm in 1 cc. You would give:

   a. 2.5 cc
   b. 20 cc
   c. .2 cc
   d. 2 cc

10. The doctor has ordered Inderal 60 mgm po. You have on hand Inderal 40 mgm/tab. You would give:

   a. 1.2 tabs
   b. 1.5 tabs
   c. 2 tabs
   d. 1 tab

POST TEST - concluded

11. Most antihypertensives are reserved for the treatment of hypertensive emergencies such as malignant hypertension.

    a. true
    b. false

Directions: List the following medications according to their drug classification. Write your answers at the bottom of your answer sheet.

Drug **Classifications**

Antihypertensive agents 12. ________ 13. ________

Diuretic 14. ________ 15. ________ 16. ________

Medications

Lasix
Aldactone
Dyrenium
Lopressor
Inderal

Directions: List three fruits high in potassium. Write your answers at the bottom of your answer sheet.

17. ______________________________

18. ______________________________

19. ______________________________

20. Low-sodium diets are often ordered by the physician because sodium helps the patient diurese.

    a. true
    b. false

ANSWERS TO POST TEST

Module E - Part II

1. d
2. a
3. a
4. d
5. c
6. d
7. d
8. c
9. d
10. b
11. b
12. Lopressor
13. Inderal
14. Lasix
15. Dyrenium
16. Aldactone
17. Bananas, apricots
18. Peaches, oranges
19. Figs
20. b

POST TEST

Module F - Part II

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. An antidiabetic agent that is used to raise the blood sugar and conteract hypoglycemia reactions is:

   a. Dymelor.
   b. DBI.
   c. Diabinese.
   d. Glucagon.

2. You have U-100 insulin. The order is for 25 units. You give:

   a. 0.25 cc in a TB syringe.
   b. 25 units in a U-100 syringe.
   c. 15 units in a U-40 syringe.

3. Rapid - acting insulins include: (there may be more than one answer)

   a. Protamine Zinc insulin - PZI.
   b. Lente.
   c. NPH.
   d. Semilente.
   e. Regular.
   f. Ultralente.

4. Mrs. Shell has the following order on the medex:

   Ultralente insulin U-100 12 units of Am at 0730
   Sliding scale insulin QID AC & HS 0730 - 1130 - 1630 - 2100 as follows:

Regular	Insulin	U-100	- 10	Units	for	4+	clinitest
"	"	"	- 8	"	"	3+	"
"	"	"	- 6	"	"	2+	"
"	"	"	- 4	"	"	1+	"

   No insulin for trace or negative clinitest.
   Add 4 units of regular insulin for any acetone.

   It is 0730 and Mrs. Shell's C/A is 3+ Mod. How many units (total) of insulin will you give? (Please write your answer in space provided at the bottom of the answer sheet.)

POST TEST - continued

5. The order is for 5 units of regular and 16 units of NPH insulin. Choose the correct action and place in the order you would prepare. Please use the bottom of your answer sheet to write selected answers in the correct order.

   a. Inject air into regular insulin and draw up dose.
   b. Inject air into NPH and draw up dose.
   c. Inject air into NPH.
   d. Inject air into regular.
   e. Draw up NPH.
   f. Draw up regular.

6. Hypoglycemic or insulin reaction may be suspected if the following are present:

   1. excessive thirst.
   2. moist and pale skin.
   3. tremors.
   4. acetone breath odor.
   5. sugar in the urine.
   6. blood sugar of 40.

   a. 1, 2, 3, 4, 6
   b. 2, 3, 5, 6
   c. 2, 3, 4, 6
   d. 2, 3, 6

7. Intermediate-acting insulins include: (there may be more than one correct answer)

   a. Protamine Zinc suspension PZI
   b. Lente
   c. NPH
   d. Semilente
   e. Regular
   f. Ultralente

8. Corticosteroids may be useful for treatment of:

   1. inflammation in rheumatoid arthritis.
   2. shock.
   3. immunosuppression following organ transplants.
   4. hypercalcemia in some forms of cancer.

   a. 1, 3, 4
   b. 1, 2, 4
   c. 2, 3, 4
   d. all are correct

9. Parathyroid hormone regulates body levels of:

   a. sex hormones.
   b. insulin.
   c. phosphorus and calcium.
   d. vitamin D.

POST TEST - continued

10. Two vitamins produced by the body are:

    a. K and C.
    b. A and D.
    c. D and K.
    d. C and E.

11. A proven function of vitamin C is in:

    a. the healing of wounds.
    b. aiding blood coagulation.
    c. prevention of the common cold.

12. A good source of vitamin D is:

    a. citrus fruits.
    b. sunshine.
    c. green leafy vegetables.
    d. grains.

13. Side effects of corticosteroid therapy may include:

    1. poor wound healing.
    2. hypotension.
    3. hirsutism.
    4. weight gain.
    5. induced diabetes mellitus.

    a. 1, 3, 4, 5
    b. 2, 3, 4, 5
    c. 1, 2, 3, 4
    d. all are correct

14. The fat-soluble vitamins are:

    a. A C E K
    b. D B E K
    c. D A B K
    d. A D E K

15. Vitamins stored in the body by the liver and fatty tissue in large amounts are classified as:

    a. fat-soluble
    b. water-soluble

POST TEST - concluded

Directions: List the following medications according to their drug classification. (Please list answers at the bottom of your answer sheet.)

Drug Classifications

Antidiabetic agents 16. ________ 17. ________ 18. ________

Vitamins 19. ________ 20. ________ 21. ________

Corticosteroids 22. ________ 23. ________ 24. ________

Thyroid hormones 25. ________ 26. ________

Thyroid hormone antagonists 27. ________

Pituitary hormones 28. ________ 29. ________ 30. ________

Medications

Pitocin
Synthroid
folic acid
Dymelor
insulin
thiamine
pyridoxine
Decadron
Aristocort
Cortef
Euthroid
Orinase
Ascorbic acid
ACTH
iodine
Pitressin

ANSWERS TO POST TEST

Module F - Part II

1. d
2. b
3. d, e
4. 24
5. CAE
6. d
7. b, c
8. d
9. c
10. c
11. a
12. b
13. a
14. d
15. a
16. Orinase
17. Dymelor
18. Insulin
19. folic acid
20. pyridoxine
21. ascorbic acid
22. Decadron
23. Cortef
24. Aristocort
25. Synthroid
26. Euthroid
27. Iodine
28. ACTH
29. Pitocin
30. Pitressin

POST TEST

Module G - Part II

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. Patient teaching for women taking oral contraceptives should include all of the following, EXCEPT advising the woman that:

   a. if a pill is forgotten, it should be taken as soon as remembered or two should be taken the next day.
   b. smoking increases the risk of serious cardiovascular side effects.
   c. headache, nausea, dizziness and breast tenderness are common when the drug is first started.
   d. after discontinuing the pill, women have an increased incidence of multiple births.

2. Side effects of oral contraceptives may include:

   1. acne.
   2. vaginal candidiasis.
   3. bloating.
   4. thrombophlebitis.
   5. depression.

   a. 1, 3, 4
   b. 1, 3, 4, 5
   c. 2, 3, 4, 5
   d. all are correct

3. The "morning after" pill used to prevent contraception after intercourse has occured is:

   a. norethindrone (Micronor)
   b. Ortho-Novum
   c. medroxyprogesterone acetate (Provera)
   d. diethylistilbestrol - DES (Stilbestrol)

4. In patients who are receiving an adrogen for the treatment of breast cancer, the nurse should check lab values, watching carefully for an elevated calcium. This may indicate:

   a. too much calcium in the diet and a need to decrease intake of dairy products and other foods high in calcium.
   b. a need to restrict fluid intake, as elevated calcium often increases edema.
   c. metastasis of the cancer to the bone and a need for the physician to reevaluate.
   d. virilization that may not be reversible.

POST TEST - continued

5. With the use of a drug such as testosterone cypionate (Depo-testosterone) in treating menorrhagia or other menstrual disorders, masculinization:

   a. may not be reversible after the drug is discontinued.
   b. is reversible when the medication is stopped.

6. The main uses for chorionic gonadotropin (Pregnyl) are:

   1. gonadal deficiencies such as cryptorchisms.
   2. relief from postpartum breast engorgement.
   3. contraception.
   4. to encourage ovulation in women who have had problems ovulating.

   a. 2, 4
   b. 1, 4
   c. 1, 2, 3
   d. 1, 2, 4

7. Discharge teaching for patients going home on an estrogen should include advising:

   1. patients to weigh themselves once or twice weekly and report sudden weight gain.
   2. patients that tenderness and swelling in the legs are ordinary for the first month or so of the therapy and should subside later.
   3. that glycosuria in the diabetic patient needs to be reported to the doctor as a dosage adjustment of the antidiabetic agent used may be necessary.
   4. that the symptoms of vaginal candidiasis should be treated promptly if they occur.

   a. 1, 2, 3
   b. 1, 3, 4
   c. 2, 3, 4
   d. all are correct

8. The "mini-pill," a progestin only contraceptive, is:

   a. Halotestine.
   b. Enovid.
   c. Min-Oval.
   d. Micronor.

9. The doctor has ordered Premarin 1.25 mg, qd, po. You have capsules marked 0.625 mg. You will give:

   a. 2 capsules.
   b. 5 capsules.
   c. 4 capsules.
   d. 1 capsule.

POST TEST - continued

10. The doctor has ordered Theelin 0.5 mg IM, you have 1 mg/cc. Give:

    a. 3 cc
    b. 2 cc
    c. 5 cc
    d. .5 cc

11. Functions of progesterone include:

    1. preparing the uterus for implantation of the embryo.
    2. preparing the breast for lactation.
    3. inducing contractions at the termination of pregnancy.
    4. inhibiting secretion of pituitary gonadotropins.

    a. 1, 2, 3
    b. 1, 2, 4
    c. 2, 3, 4
    d. all are correct

12. Oral contraceptives are contraindicated in women:

    1. with a history of cancer of the reproductive organs.
    2. cerebrovascular disease.
    3. suspected pregnancy.
    4. women over 35 who smoke heavily.
    5. with endometriosis.

    a. 1, 2, 3, 4
    b. 1, 2, 3, 5
    c. 2, 3, 4, 5
    d. all are correct

13. Diethylstilbestrol (DES) and estrogen may be used:

    1. for postcoital contraception.
    2. for replacement therapy after menopause.
    3. in the treatment of cancer of the prostate.
    4. as a relief from postpartum breast engorgement.

    a. 1, 2, 3
    b. 1, 2, 4
    c. 2, 3, 4
    d. all are correct

14. A group of drugs useful in the treatment of hypogonadism, oligospermia and other deficiencies because of their ability to develop male sex characteristics is:

    a. androgens
    b. gonadotropins
    c. estrogens
    d. progestogens

POST TEST - concluded

15. A group of drugs that have been extracted and purified from the urine of postmenopausal and pregnant women is:

    a. androgens
    b. gonadotropins
    c. estrogens
    d. progestogens

16. An ovarian hormone accepted by the corpus luteum during the last half of the menstrual cycle, preparing the uterus for implantation of the fertilized ovum is:

    a. progestogen
    b. estrogen
    c. androgen
    d. gonadotropin

Directions: Match the following drug classifications with the medication(s) that belong in each classification. Please write your answers on the spaces provided at the bottom of your answer sheets.

Drug Classifications

androgens 17. ________ 18. ________ 19. ________

gonadotropins 20. ________ 21. ________

estrogens 22. ________ 23. ________ 24. ________

progestogens 25. ________ 26. ________ 27. ________

oral contraceptives 28. ________ 29. ________ 30. ________

Medications

Delalutin
Halotestin
Tace
Provera
Ovulen
Depotestosterone
Pergonal
Stilbesterol
Micronor
Norinyl
Danocrine
Pregnyl
Premarin
Ortho-Novum

ANSWERS TO POST TEST

Module G - Part II

1. d
2. d
3. d
4. c
5. a
6. b
7. b
8. d
9. a
10. d
11. b
12. a
13. d
14. a
15. b
16. a
17. Halotestin
18. Depotestosterone
19. Danocrine
20. Pergonal
21. Pregnyl
22. Premarin
23. Tace
24. Stilbesterol
25. Provera
26. Micronor
27. Delalutin
28. Ovulen
29. Ortho-Novum
30. Norinyl

POST TEST

Module H - Part II

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. All of the following statements are considered true, EXCEPT:

   a. phenazopyridine HCL (Pyridium) may cuase the urine to appear red or orange.
   b. aspirin and aspirin products should be used cautiously in patients with nasal polyps, as bronchospasm may occur.
   c. overdosage or chronic usage of Tylenol may result in damage to the liver.
   d. drugs such as indomethacin (Indocin) and acetylsalicylic acid are best given on an empty stomach to enchance drug absorption.

2. The amount of codeine contained in Empirin #2 is:

   a. 1/8 grain
   b. 1/4 grain
   c. 1/2 grain
   d. 1 grain

3. Gingival hyperplasia, commonly seen in children and adolescents, is associated with usage of:

   a. Dilantin.
   b. phenobarbital (Luminal).
   c. codeine.
   d. Clinoril.

4. The preop medication order is:

MS 5 mg	IM	(supplied as 10 mg/cc)
droperidol 1.0 mg	ON	(supplied as 2.5 mg/cc)
atropine 0.14 mg	Call	(supplied as 1.0 mg/cc)

   What would be the total amount of medication if you mix all three in one syringe?

   a. 0.8 cc
   b. 3.5 cc
   c. 1/34 cc
   d. 1.3 cc

POST TEST - continued

5. You have phenobarbitol 130 mg/cc. The doctor has just written a stat order for 30 mg IM. How much will you give?

    a. 4.3 cc
    b. 0.23 cc
    c. 0.5 cc
    d. 25 m

6. A hypnotic such as Placidyl 500 mg given to a man 86 years of age may result in:

    a. narcosis and coma.
    b. relaxation.
    c. confusion and restlessness.
    d. none are correct.

7. The doctor has ordered morphine sulfate 6 mg, IM. You have on hand morphine gr 1/4 in 1 cc. You will give:

    a. 0.5 cc
    b. 0.4 cc
    c. 0.6 cc
    d. 1.8 cc

8. What patient teaching would you provide a patient going home on a sedative hypnotic, such as secobarbital (Seconal)?

    a. Alcohol should not be used in conjuction with this drug as the depressant action is intensified.
    b. Analgesics should not be taken at the same time as these drugs because they both provide relief of pain.
    c. These drugs should be taken during the daytime as they will interfere with sleep if taken at night.
    d. a, c
    e. all are correct

9. Valium may be given for:

    a. prevention of convulsions.
    b. skeletal muscle relaxation.
    c. suppression of anxiety.
    d. treatment of alcohol withdrawal symptoms.
    e. a, c
    f. all are correct

10. Two drugs given during surgery that require the initial dosages of narcotic analgesics to be reduced postoperatively are:

    a. Innovar and Sublimaze.
    b. Valium and Demerol.
    c. sodium pentothal and nitrous oxide.

POST TEST - continued

11. Mary N's family has insisted that she be medicated for pain. Looking at the medex, you notice she can have morphine 10 mg q2h p.r.n. pain. On what criteria would you consider contacting the doctor before administering this drug?

    1. BP of 180/90 (usual BP 110/76)
    2. constricted pupils
    3. the patient is sobbing
    4. shallow respirations
    5. respirations of 10 per minute

    a. 1, 2, 3
    b. 1, 4, 5
    c. 2, 4, 5
    d. all are correct

12. Groups of drugs that relieve pain without loss of consciousness but may cause physical and psychological dependence are:

    a. narcotic analgesics.
    b. nonnarcotic analgesics.
    c. narcotic antagonists.
    d. anticonvulsants.

13. A group of drugs that acts to modify thought disorders, lessen paranoid symptoms, agitation, hallucinations and delusions is:

    a. antipsychotics.
    b. tranquilizers.
    c. cerebral stimulants.
    d. antidepressants.

14. A group of drugs used for insomnia, to provide preop sedation and to relieve anxiety is:

    a. analgesics and antipyretics.
    b. antipsychotics.
    c. cerebral stimulants.
    d. sedatives and hypnotics.

Directions: Match the following drug classification with the medication(s) that belong in each classification. Please write your answers on the spaces provided at the bottom of your answer sheet.

Drug Classifications

Anticonvulsants 15. ________

Nonnarcotic analgesics & antipyretics 16. ________ 17. ________ 18. ________

Narcotic analgesics 19. ________ 20. ________ 21. ________

POST TEST - concluded

Narcotics antagonists 22. ________

Sedatives & hypnotics 23. ________ 24. ________ 25. ________

26. ________

Tranquilizers 27. ________ 28. ________ 29. ________

Antidepressants 30. ________ 31. ________

Antipsychotics 32. ________ 33. ________

Cerebral stimulants 34. ________ 35. ________

Medications

Elavil
Atarax
Motrin
Demerol
Narcan
Mellaril
Noctec
Tylenol
codeine
Placidyl
Doriden
caffeine
Librium
Darvon
morphine
Dalmane
Dilantin
Valium
Aventyl
thorazine
Benzedrine

ANSWERS TO POST TEST

Module H - Part II

1. d
2. b
3. a
4. d
5. b
6. c
7. b
8. d
9. f
10. a
11. c
12. a
13. a
14. d
15. Dilantin
16. Darvon
17. Motrin
18. Tylenol
19. Demerol
20. codeine
21. morphine
22. Narcan
23. Noctec
24. Placidyl
25. Doriden
26. Dalmane
27. Librium
28. Valium
29. Atarax
30. Elavil
31. Aventyl
32. thorazine
33. Mellaril
34. Benzedrine
35. caffeine

POST TEST

Module I - Part II

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. Cerumenex and Debrox are two examples of otics used:

   a. to treat ear infections.
   b. to produce analgesic effects due to their local anesthetic abilities.
   c. to soften impacted ear wax.

2. Two opthalmic anti-infectives that are used to treat viral infections of the eye caused by herpes simplex I and II are:

   a. tetracycline hydrochloride and erythromycin.
   b. Dendrid and Vira-A.
   c. prednisolone acetate and fluorometholone.
   d. pilocarpine and silver nitrate.

3. Jeffry, a 3-year-old, has been brought to the ER after his sister shattered a coke bottle next to his face. What drug may be used to examine the cornea and remove any glass that may have become lodged there?

   a. Prednicon
   b. Achromycin Opthalmic
   c. Visine
   d. Pontocaine

4. The doctor has ordered gentamicin sulfate (Garamycin Ophthalmic) 1 gtt OU Q 4 hours for an infection of the conjunctiva. What discharge instructions should be given to the patient who will be going home with this drug?

   a. One drop should be applied in the left eye every 4 hours.
   b. Upon terminating this treatment, any excess medication should be disposed of because the product becomes toxic with age.
   c. Facial washcloths and pillows should not be shared with others.
   d. All are correct.

POST TEST - continued

5. Side effects from using an opthalmic anti-inflammatory as prednisolone acetate may include:

   a. increased intraocular pressure and adrenal suppression.
   b. decreased intraocular pressure and susceptibility to fungal or viral infection.
   c. eye and brow pain and adrenal suppression.
   d. decreased blood pressure and photophobia.

6. A group of drugs contraindicated in patients with glaucoma is:

   a. myotics.
   b. topical ophthalmic anesthetics.
   c. otics.
   d. mydriatics.

7. A drug that is legally required to be instilled in the eyes of newborns to prevent gonorrheal ophthalmia is:

   a. atropine sulfate (Isopto Atropine).
   b. pilocarpine HCL (Isopto Carpine).
   c. silver nitrate.
   d. tetrahydrozoline (Visine).

8. Which eye ointment contains cortisporin?

   a. Chloroptic Ophthalmic
   b. Hydrocortone
   c. Miostat
   d. Isopto Atropine

9. Steps that should be followed in instilling Murine 2 gtts in a patient's eyes include:

   1. washing hands.
   2. telling the patient to look down.
   3. making certain you have the right patient, medication and eye.
   4. pulling down the patient's lower eye lid.
   5. squeezing a single drop of medication onto the patient's cornea.

   a. 1, 3, 4
   b. 1, 3, 4, 5
   c. 1, 2, 3, 4
   d. all are correct

POST TEST - concluded

10. In irrigating the eye:

    1. be certain to wash your hands before beginning the procedure.
    2. do not touch any part of the eye with the tip of the irrigating syringe.
    3. make sure that the solution will flow from the outer canthus to the inner canthus of the affected eye.

    a. 1, 2
    b. 2, 3
    c. 1, 3
    d. all are correct

11. The possibility of systemic absorption of an eye medication may be minimized by:

    a. topical application.
    b. applying pressure against the lacrimal sac for 1 to 2 minutes after instillation.

Directions: Match the drug in Column I with the answer that best describes it in Column II. Please write your answers on the spaces provided at the bottom of your answer sheet.

COLUMN I

12. Artificial tears
13. Miotics
14. Mydriatics
15. Ophthalmic anti-infectives
16. Ophthalmic anti-inflammatory
17. Topical ophthalmic anesthetics

COLUMN II

A. A group of drugs that has an anti-bacterial, antiviral or antifungal action.

B. A group of drugs used for a variety of diagnostic and surgical procedures that causes a loss of sensation.

C. A group of drugs used to provide lubrication of the eyes, remove foreign particles and protect against infection.

D. A group of drugs that dilates the pupil and causes paralysis of the muscles responsible for accommodation.

E. A group of drugs that causes secretion of tears and decreased ocular tension by constriction of the pupils.

F. A group of drugs consisting of corticosteroids used topically to treat redness of the eye.

ANSWERS TO POST TEST

Module I - Part II

1. c
2. b
3. d
4. c
5. a
6. d
7. c
8. b
9. a
10. a
11. b
12. c
13. e
14. d
15. a
16. f
17. b

POST TEST

Module J - Part II

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. When giving an antineoplastic drug, you should always check the drug label against the:

   a. medication card.
   b. medex.
   c. order.
   d. narcotic book.

2. IV's used with chemotherapy should be carefully observed for:

   a. rate.
   b. redness.
   c. infiltration.
   d. all are correct

3. If infiltration occurs during administration of an IV antineoplastic, there is:

   a. no need for concern, as no harm will result.
   b. the possiblity of severe tissue damage.
   c. no need for concern because it is the RN's responsibility.
   d. none are correct

4. The patient's condition should be assessed:

   a. only before therapy.
   b. only during therapy.
   c. only after therapy is completed.
   d. before, during and after therapy.

5. Stomatitis:

   a. is an early sign of toxicity.
   b. can be prevented with proper mouth care.
   c. can be alleviated with glycerine and lemon.
   d. a, b
   e. all are correct

POST TEST - continued

6. Depression of bone marrow may cause:

   a. thrombocytopenia.
   b. leukopenia.
   c. decreased resistance to infection.
   d. all are correct
   e. none are correct

7. Alopecia is a side effect that:

   a. can be minimized with a scalp tourniquet.
   b. is a permanent and unfortunate side effect.
   c. occurs eight weeks after the end of the treatment.

8. Meals should be:

   a. planned as usual.
   b. omitted except for one large meal per day.
   c. given in small, frequent feedings.
   d. given by NG tube only.

9. Diarrhea during chemotherapy:

   a. may indicate cellular damage to the GI tract.
   b. should be reported promptly.
   c. may lead to electrolyte imbalance and acidosis.
   d. all are correct
   e. none are correct

10. Antineoplastic drugs exert much of their toxic effect on cells that grow rapidly, as cancer cells do. Other rapidly growing cells or tissues within the body include:

    1. those of the GI tract.
    2. the brain and other nervous tissues.
    3. the skin.
    4. the lymph tissue.
    5. the bone marrow.

    a. 1, 3, 4, 5
    b. 2, 3, 4
    c. 1, 5
    d. 1, 3, 5
    e. all are correct

POST TEST - continued

11. Possible side effects from the drug Cytoxan include:

    1. alopecia.
    2. nausea and vomiting.
    3. feminization in men and masculization in women.
    4. depression of peripheral blood cell count.

    a. 1, 2, 3
    b. 1, 2
    c. 2, 3
    d. 1, 2, 4

12. Inga, an LPN and a recent grad, is passing team medication. Because she is late with her 0900 meds, she pours the drug chlorambucil (Leukeran) and proceeds to the patient's room to give it, even though she doesn't know what it is or why the patient is receiving it. When the patient asks why she is receiving the med, the most appropriate response for Inga to make is:

    a. "I really don't know. Why don't you ask your doctor when he comes in? He ordered the drug."
    b. "It's for a condition you have. You need to take it 4x daily. There is your water."
    c. "I'm really not certain, but when I finish passing these other medications I'll check for you."
    d. "It's for your leukemia." (After all, that's the diagnosis she was admitted to the hospital with.)

Directions: Match Column 1 with Column 2. Mark your answer on your answer sheet.

COLUMN 1	COLUMN 2
13. Alkylating agents	A. A group of antineoplastic drugs whose side effects include fluid retention, gynecomastia, hirsutism, weight gain and psychiatric changes.
14. Antimetabolite	B. A group of drugs capable of cellular destruction at any phase of the cell's life.
15. Antineoplastics altering hormone balance	C. A group of cell-cycle specific drugs acting only during certain cycles of the cell's life.

POST TEST - concluded

Directions: Assess your patient who is receiving cancer therapy and document your assessment in five specific areas. Write these areas at the bottom of your answer sheet.

16. ______________________________

17. ______________________________

18. ______________________________

19. ______________________________

20. ______________________________

ANSWERS TO POST TEST

Module J - Part II

1. c
2. d
3. b
4. d
5. d
6. d
7. a
8. c
9. d
10. d
11. d
12. c
13. b
14. c
15. a
16. nutritional status
17. skin condition
18. oral condition
19. degree of mobility
20. psychological status

POST TEST

Module K - Part II

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet.

1. Positive response to antibiotic therapy may be indicated by:

   a. thrombocytopenia.
   b. decrease in purulent drainage.
   c. temperature of 101° F only during the afternoon hours.
   d. malaise.
   e. a, b
   f. all are correct

2. In giving discharge instructions to Tamara Tomita, who is going home on sulfisoxazole (Gantrisin) 2 grams PO q.i.d., you will:

   a. encourage her to avoid the sun as photosensitivity may result from using this drug.
   b. warn her that her urine may have a bluish tinge.
   c. encourage her not to drink milk or take antacids with this drug.
   d. encourage a fluid intake that will support a urinary output of 1500cc/24 hours to prevent crystalluria.

3. Aminoglycosides may be administered 3-5 days before GI surgery:

   a. to aid in the decreased incidence of postop wound infection.
   b. to decrease bacterial count of the bowel contents.
   c. as absorption of these medications from the GI tract (when given orally) is poor.
   d. a, b
   e. all are correct

4. Anthony has developed a sore throat and fever. Instead of paying a doctor to diagnose the problem and treat it properly, he talked his girlfriend, Delia, into taking an old prescription drug of tetracycline she had from last winter. This practice should be discouraged because:

   1. the medical profession would soon go out of business if this procedure was adopted.
   2. tetracylines decompose under various conditions, such as heat and age, resulting in a product toxic to the body.
   3. Anthony's problem may not be related to a bacterial infection that would be treated by antibiotics.
   4. the organisms responsible for Anthony's problem may be resistant to this drug.

   a. 3, 4
   b. 2, 3, 4
   c. all are correct
   d. none are correct

POST TEST - continued

5. Nephrotoxicity is a serious side effect related to long-term usage of garamycin. The nurse can be alerted to this problem:

   a. by keeping an accurate I and O.
   b. by awareness that this problem may be indicated by an elevated BUN or serum creatinine.
   c. by awareness that this problem may be indicated by an abnormally low BUN or serum creatinine.
   d. a, b
   e. a, c

6. Antifungals may be used:

   a. for bowel sterilization prior to surgery.
   b. in the treatment of ringworms.
   c. in the treatment of vaginal yeast infections.
   d. b, c
   e. all are correct

7. Possible side effects in the administration of penicillin include:

   1. hives.
   2. nausea, vomiting and diarrhea.
   3. laryngeal edema.
   4. anaphylactic shock.
   5. ototoxicity.

   a. 1, 2, 3, 4
   b. 1, 2, 3, 5
   c. 1, 2, 4, 5
   d. all are correct

8. Superinfection may result from:

   a. overgrowth of organisms that are normally present within an individual.
   b. accidental bacterial contamination during a drug injection.
   c. overgrowth of organisms contacted through the nursing personnel or other patients.
   d. all are correct

9. Not only are antimalarial drugs used to provide suppressive treatment of malaria, but a drug such as hydroxychloroquine sulfate (Plaquenil Sulfate) may also be used in the treatment of:

   a. gangrene.
   b. lupus erythematosus.
   c. rheumatoid arthritis.
   d. b, c
   e. none is correct

POST TEST - continued

10. The "first line" or primary drugs used in the treatment of TB include:

    a. INH, streptomycin, PAS and ethambutol
    b. Seromycin, Pyrazinamide, Viocin and Kantrex
    c. dapsone, tetracycline and gentamicin
    d. ampicillin, Mycostatin and tobramycin

11. Sulfonamides may be used:

    1. to treat urinary tract infections.
    2. to treat pre and postop suppression of bowel flora.
    3. as an adjunct in the treatment of toxoplasmosis.
    4. to treat vaginal yeast infections.

    a. 1, 2, 3
    b. 1, 2, 4
    c. 2, 3, 4
    d. all are correct

12. It is important that antibiotics be given at the time ordered because:

    a. to do otherwise may alter the therapeutic blood level of the drug.
    b. otherwise the attending doctor will look upon you as incompetent.
    c. a superinfection will result if this is not done.
    d. a, c

13. A group of semisynthetic antibiotics that are bactericidal, moderately broad spectrum and similar in chemical structure to the penicillins is the:

    a. tetracyclines.
    b. cephalosporins.
    c. sulfonamides.
    d. macrolides.

14. In the administration of nystatin (Mycostatin):

    1. the oral preparation for candidiasis should be placed in both sides of the mouth and then swished back and fourth 1-2 minutes before swallowing.
    2. the patient should be instructed in good hygiene of affected areas to prevent further contamination.
    3. the solution should be protected from light when administered intravenously.
    4. tissue damage will occur with IV infiltration.

    a. 1, 2
    b. 3, 4
    c. 1, 2, 4

POST TEST - continued

15. Tetracyclines may exhibit which side effects?

    1. gastric distress, including diarrhea
    2. photosensitivity
    3. black tongue
    4. blood dyscrasias
    5. superimposed infections

    a. 2, 3
    b. 1, 2, 3, 4
    c. 1, 2, 3, 5
    d. all are correct

16. In the administration of amphotercin B, the following should be kept in mind:

    1. Light destroys the medication, therefore the solution should be covered by a dark bag.
    2. When given orally, the preparation should be placed in both sides of the mouth and swished from side to side for 1-2 minutes before swallowing.
    3. Side effects may include violent chills, fever, nausea and vomiting.

17. A medication reserved for severe infections such as Rocky Mountain spotted fever or typhoid fever is:

    a. Choloromycetin.
    b. Ilosone.
    c. Garamycin.
    d. Bicillin.

18. The "spectrum of action" an antibiotic exhibits:

    a. is defined by whether the organism treated with the drug stains red or blue under the microscope when a gram stain is done.
    b. indicates the range of microorganisms the drug will affect.
    c. may be broad spectrum, as are the aminoglycosides or narrow spectrum as are the penicillins or any place in between.
    d. b, c
    e. all are correct

19. Amy Anderson, a diabetic who normally uses the clinitest tablets to test her urine for sugar, should be encouraged to use the testape instead in order to avoid false positives while taking which antibiotics?

    a. Keflex
    b. Omnipen
    c. Bactrim DS
    d. Macrodantin

POST TEST - concluded

Directions: Match the following drug classifications with the medication(s) that belong in each classification. Please write your answers on the spaces provided at the bottom of your answer sheet.

Drug Classifications	Medications
20. Aminoglycosides	a. Atabrine HCL
21. Antifungal	b. Bicillin
22. Antimalarial	c. Macrodantin
23. Antitubercular	d. Keflin
24. Cephralosporin	e. Vibramycin
25. Macrolide	f. Amphoterecin B
26. Penicillin	g. Bactrim
27. Sulfonamide	h. Garamycin
28. Tetracycline	i. Ilosone
29. Urinary tract germicide	j. I.N.H.

Directions: At the bottom of your answer sheet, write your answers for the next two questions. Show your work if indicated. DO NOT WRITE ON THIS TEST.

30. The doctor has ordered Cefadyl 750 mg IM Q6hs. You are provided with a 1 gram vial of Cefadyl that contains the following information for reconstitution:

    For IM use add 2 ml sterile or bacteriostatic water for injection, USP. Each 1.2 ml contains 500 mg of Cefadyl. How many cc's will you give? ________________

31. The doctor has ordered Kefzol 250 mg IM Q4 hrs. You are provided with a 1 gram vial of Kefzol and the following information for reconstitution:

    For IM use add 3 ml of sterile water or bacteriostatic chloride to give you a total volume of 3.5 ml. How many cc's will you give? ____________________________

ANSWERS TO POST TEST

Module K - Part II

1. b
2. d
3. e
4. b
5. d
6. d
7. a
8. d
9. d
10. a
11. a
12. a
13. b
14. a
15. d
16. b
17. a
18. d
19. a
20. h
21. f
22. a
23. j
24. d
25. i
26. b
27. g
28. e
29. c
30. 1.8
31. .88

POST TEST

Module L - Part II

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. Johnny Carrol has had a rough week. Besides getting his rubella vaccine and becoming sick, his mother has found two tiny puncture spots on his arm after he was playing in the backyard near the shed. There is a nest of black widow spiders in the area. What other symptoms may indicate a black widow spider bite?

   a. nausea and fever
   b. rigid abdomen and dimished bowel sounds
   c. hypotension
   d. numb or tingling feet
   e. a, b, d
   f. all are correct

2. You are to give 35 mg IM stat of Benadryl. You have 50 mg in 1cc. You would give:

   a. 0.9 cc
   b. 0.6 cc
   c. 0.7 cc
   d. 2/3 cc

3. An antihistamine such as Benadryl may be used:

   a. to treat rhinitis.
   b. to treat allergy symptoms.
   c. to prevent motion sickness.
   d. as sedation.
   e. a, b, d
   d. all are correct

4. A drug that is given within 72 hours after delivery to Rh negative mothers who give birth to Rh positive babies is:

   a. immune serum globulin.
   b. RhoGAM.
   c. pneumococcal vaccine.
   d. Clistin R-A.

POST TEST - continued

5. The doctor has ordered Benadryl 50 mg po. All you have is IM. The equivalent dose for injection that you may give is:
   a. 25 mg
   b. 30 mg
   c. 50 mg
   d. none are correct

6. The doctor has ordered Periactin 10 mg stat. You have 4 mg tablets. Give:
   a. 3 tabs
   b. 2 tabs
   c. 4 tabs
   d. none are correct

7. Johnny Carroll, 12-month-old, received his rubella vaccine yesterday and this a.m. is crying, not as active as usual and is running a temp of 102° F. Which statement is most appropriate?
   a. This is common occurrence for which Tylenol or aspirin as suggested for the child's age would be appropriate.
   b. These are symptoms that are not common with this vaccine and the doctor should be called.

8. A booster injection of tetanus/diphtheria toxoid for adults should be given:
   a. only when injury such as stepping on rusty nail occurs.
   b. no booster is necessary after initial series.
   c. every five years.
   d. every ten years.

9. The doctor has ordered Temaril 5 mg P.O. You have 2.5 mg tablets. Give:
   a. 2 tabs
   b. 1 tab
   c. 5 tabs
   d. 3 tabs

10. An IV with levophed in it is to be run at 30 cc/hr. The equipment is set up to deliver 10 gtts/cc. How many drops/minute should it run?
   a. 5
   b. 15
   c. 10
   d. 22

POST TEST - concluded

Directions: For questions 11-13 match Column A with the correct definition from Column B. Mark your answers on your answer sheet.

COLUMN A

11. Vaccines
12. Immune serums
13. Antitoxins and antivenins

COLUMN B

A. These drugs are obtained from hyperimmunized donors or pooled plasma.

B. Drugs made from blood extracted from horses that have been injected with specific toxins.

C. A group of medications that contain killed microorganisms that stimulate antibody formation.

Directions: Match the following drug classifications with the medication(s) that belong in each classification. Please write your answers on the spaces provided at the bottom of your answer sheet.

Drug Classifications

Antihistamines
H1 Antagonist 14. ________ 15. ________ 16. ________
H2 Antagonist 17. ________

Antitoxins and antivenins 18. ________

Immune serums 19. ________

Vaccines and toxoids 20. ________

Medications

DPT
Phenergan
Micrurus fulvius antivenin
Periactin
RhoGAM
Tagamet
Benadryl

ANSWERS TO POST TEST

Module L - Part II

1. e
2. c
3. f
4. b
5. d
6. d
7. a
8. d
9. a
10. a
11. c
12. a
13. b
14. Periactin
15. Benadryl
16. Phenergan
17. Tagamet
18. Micrurus fulvius antivenin
19. RhoGAM
20. DPT

Unit 20 emphasizes proficiency in the application of knowledge and skills learned throughout the training program while in the role of a practical nurse in a clinical setting. You will also learn about the functions and educational requirements of the LPN.

INTEGRATION

Module A - Team Medications
Module B - Total Patient Care
Module C - Assistant Team Leader
Module D - The Practical Nurse Role
Post Test: No written tests.

Evaluation will be determined by the completion of the performance objectives as listed in each module.

Suggested Resources

The following texts will supplement the learning materials for this unit. If you are unable to locate these materials, your instructor will assist you.

1. Physician's Desk Reference, Medical Economics Company, Oradell, New Jersey, 1981.

2. Skelley, Esther Gl, R.N., M.S. Medications and Mathematics for the Nurse. Delmar Publishers, Albany, New York, 1976.

3. Nurse Guide to Drugs, Nursing 80 Books, Intermed Communication Inc., Horsham, PA, 1980.

*At this point in the program we recommend that students review testing in all areas in order to help them prepare for the State Board Examination. Students can also study Saunder's Review for Practical Nurses by Claire Keane, W.B. Saunders Co., Philadelphia, PA, 1977.

unit 20

INTEGRATION

Module A - Team Medications

RATIONALE

When you independently administer and record medications for a team in the clinical area, you must use your knowledge of medications and display your procedural skills in administering parenteral and oral medications. You also must be able to calculate and to give the proper dosage ordered.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Verbally identify medications and explain their usual action.
2. Demonstrate organization in medication setup.
3. Demonstrate identification of priorities in medication administration.
4. Demonstrate the ability to correctly convert and calculate dosages.
5. Demonstrate the ability to administer oral and parenteral medications.
6. Demonstrate the ability to record medications.
7. Complete medication cards for drugs administered in the clinical area while on team medications.

LEARNING ACTIVITIES

Directions: All the information you will need to complete this module will be obtained from the team medex, from your choice of medication reference books, and/or Unit 19. This module is a review of Unit 19. If you have any questions at any time or do not understand what you are to do, STOP, and ask your instructor to help you. Minimum time spent on Team Medications is three clinical days.

ACTIVITY #1. Team Medications

Directions: Read the following.

As a practical nurse student who is about to complete training, you will be expected to setup and administer medications for a complete team during an eight-hour period. This must be done accurately and within the time schedule that has been prescribed by the doctor. Preoperative and PRN medications will be included in the team medications. If you are unable to administer medications to a team of patients, correctly give medications to 8-10 patients for an assigned shift.

LEARNING ACTIVITIES - concluded

ACTIVITY #2. Medication Cards

Directions: Read the following.

Each medication administered on your assigned team should be listed on a medication card. You may use your medication cards from Peds/OB, Psych/Community Health, or Pharmacology. Be sure you have a card for each medication administered. Bring your drug card packet to the clinical area each day. This is your own resource for drug information. USE IT!!

On the medication cards you should include:

1. Name of medication - generic and trade
2. Dose
3. Route
4. Usual action
5. Indication for use with patient
6. Side effects

INTEGRATION

Module B - Total Patient Care

RATIONALE

If you can accurately and safely give total patient care, you will have more confidence when you begin your job as a practical nurse.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Demonstrate the ability to complete the care of 4-5 assigned patients on an assigned shift.

2. Demonstrate organization in the daily care of assigned patients.

3. Demonstrate accurate and/or sterile techniques in performing treatments for your assigned patients.

4. Record accurate nursing observations in the nursing notes legibly and without spelling errors.

5. Demonstrate the ability to setup and administer oral and parenteral medications for your assigned patients.

6. Complete an integration project.

LEARNING ACTIVITIES

Directions: This module is a review of Health Occupations Program. All of the information you will need to complete this module can be obtained from the team kardex, medex and the patient's charts and from information given to you by your patients. If you have any questions at any time or do not understand what you are to do, STOP, and ask your instructor to help you. Minimum time spent on Total Patient Care is three clinical days.

ACTIVITY #1. Patient Care Assignment

Directions: Complete total patient care on 4-5 assigned patients demonstrating competence in the performance objectives, numbers 1-5 for Module B. You may be assigned to a 7-3 shift or 3-11 shift for this activity.

LEARNING ACTIVITIES - concluded

ACTIVITY #2. Integration Project

Directions: Complete a care plan on a selected patient (ask your instructor for care plan guideline) or you may be creative and choose a special project in any area of nursing that is of interest to you. The project should be designed in such a way that others learn from it. You must check out your topic with your instructor during the first week of integration.

unit 20

INTEGRATION

Module C - Assistant Team Leader

RATIONALE

Under the supervision of a head nurse and team leader, the assistant will assume responsibility for the quantity and the quality of nursing care given to an assigned team. She/he will supervise the nursing care given by the other team members and will demonstrate professional nursing care. This may be part of your responsibility on the job; therefore, it is important that you are aware of some of the basic requirements of team leading.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Demonstrate the ability to give assignments to the team members on your team on an assigned shift.
2. Make rounds with the doctor and demonstrate the ability to carry out the doctor's orders.
3. Record accurate nursing observations in the nursing notes legibly and without spelling errors.
4. Demonstrate the ability to give a team report.

LEARNING ACTIVITIES

Directions: All the information you will need to complete this module will be obtained from the team kardex and the material included. These guidelines are specific to a Tucson hospital where students receive integration experience. Different hospitals follow different guidelines and/or routines. Check with your instructor about your hospital routine. Minimum time for assistant team leading is three clinical days.

ACTIVITY #1. Assistant Team Leading

Directions: Work with an assigned team leader on your unit and be able to satisfactorily complete the performance objectives as listed in Module C.

LEARNING ACTIVITIES - continued

ACTIVITY #2. Team Leader Routine

Directions: Read the following guidelines and use them as you complete your assignment for Activity #1.

1. Check assignments of team members to assure equal distribution of workload. You should consider patient condition, not the number of beds served.

2. Listen to taped or verbal 11-7 report. All team members should listen to report at this time. Then:

   a. Complete team data sheet leaving enough space for team members to record clinitests, vital signs, weights and intake/output.

   b. Reinforce specifics such as weight and clinitest to your team members.

3. Leave the data sheet in your team's charting area.

4. Check TPR board for elevations.

5. Make rounds to:

   a. introduce yourself to new patients.

   b. check 0_2 tanks, Foleys, dressings, IV's casts, alignments and traction; irrigate nasogastric tubes and compress belapaks (Hemovacs).

   c. check necessary pedal or apical pulses and neuro signs.

   d. make note of patient's attitude toward you, the team members and his/her roomates.

6. Prepare surgical charts (time will depend on the operating room schedule):

   a. Check lab work - x-ray, EKG's, etc.

   b. Check surgical permit for accuracy.

   c. Check anesthesia notes.

   d. Complete checklist and give to medicine nurse for preop medication.

7. Check all charts to familiarize yourself with orders, laboratory work, progress, and nurses' notes. Make entries in the nurses' notes.

8. Make rounds with the doctor and check orders before the doctor leaves in order to avoid unnecessary calls. Be prepared to relate any problems that the patient has expressed or you have noticed when the doctor arrives to make rounds.

9. Make rounds frequently during a.m. care to observe your patient and your team members. Offer help and instruction where needed.

LEARNING ACTIVITIES - concluded

10. Check off doctor's orders.

11. Interview new admissions and obtain doctor's orders for each new patient.

12. Prepare team report for 3-11 team.

13. Conclude charting between 1330-1400 and sign off on nurses' notes.

ACTIVITY #3. General Information

Directions: Read the following. This is general information and may not be accurate in some hospitals.

1. If a temperature is 99.6 or above, it is taken every 4 hours until it returns to normal.

2. Unless ordered otherwise, vital signs are checked postop on all patients who have had general anesthesia q4h x 24 hours; also, I & O is checked for 24 hrs.

3. Blood pressure, pulse and respirations, dressings and general condition on postop patients are always checked first by the team leader when patients return from surgery. After you have checked a patient, delegate the responsibility of caring for the postop patient to one of your team members.

4. Vital signs, taken q 4hrs or more often, are graphed on a B.P. Sheet. If done daily or q8hrs, use the space provided on the graphic sheet.

5. Postop patients with general anesthesia should turn, cough, deep breathe and have active and passive exercises done to the extremities q2hrs for 24 hrs. However, this is not done with a patient who has had an endarterectomy, inner ear, eye surgery or T & A.

6. Any patient with a Foley is to have catheter care q8hrs.

7. Do preop and postop patient evaluation and teaching.

8. Keep team members informed of changes in orders such as diet and activity orders.

9. Recognize limitations of team members.

10. Your responsibility as the team leader is to see that the best possible nursing care is given.

INTEGRATION

Module D - The Practical Nurse Role

RATIONALE

When you have completed Integration you will be "job ready." This module will define the practical nurse role and functions. It will also discuss continuing education.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Define the current role of the LPN.
2. Recognize the need for continuing education.

LEARNING ACTIVITIES

Directions: All the information you need to complete this module is in the enclosed material.

ACTIVITY #1. The Practical Nurse

Directions: Read the following.

1. The practical nurse's role has been defined and redefined and is continually being revised. There are trained as well as untrained practical nurses. Some have had sound experience and have received their licenses by waiver. (Some states allow experience to substitute for education.) There are those who have had extension courses, inservice and OJT education and nursing care supervision. LPN's and their education programs differ widely, and your job responsibility will vary from one institution to another. The future will no doubt bring more unfamiliarity and change.

2. Statement of Function. The following Statement of Function of the LPN was prepared by the executive board of NFLPN in June 1970 and revised in April 1972. This statement reflects the expanding role of the LPN in today's health care system. It provides flexibility in the functions of the LPN who has obtained additional knowledge and skills through continuing education and nursing experience and serves as a guide for nursing service directors in the development of curriculum in schools of practical nursing and for the design of continuing education programs for the LPN.

Purpose

To identify the role of the licensed practical nurse* and serve as a guide to:

1. The maximum utilization of the licensed practical nurse in nursing services.

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*The title, LPN, is the same as LVN in California and Texas.

LEARNING ACTIVITIES - continued

2. Self-evaluation of nursing practice by the licensed practical nurse.

3. Development and evaluation of educational standards for the professional preparation of the licensed practical nurse.

4. The interpretation of licensing legislation.

Role and Rationale

The work of the licensed practical nurse (LPN/LVN) is an integral part of nursing. Under the direction of a qualified health professional, the licensed practical nurse is a recognized member of the health care team and performs nursing fuctions commensurate with his/her education and demonstrates competencies. On a selective basis, this includes the performance of a wide range of nursing activities. For purposes of this statement, nursing activities encompass situations ranging from:

1. Providing direct patient care at the bedside in relatively stable nursing situations such as hospitals, extended care units, nursing homes, private homes and other health care facilities and agencies.

2. To performing nursing functions in semi-complex situations, such as hospital nursing service units, recovery rooms and labor rooms.

3. To more complex situations, such as hosptial nursing service units, intensive or coronary care units and emergency rooms.

4. To the promotion of personal and community health - an important function of all well-prepared members of the health care team.

5. To promoting and carrying out preventive measures in community health facilities such as well-baby clinics, outpatient clinics and services.

In semi-complex and complex nursing situations the LPN needs a greater depth of knowledge and a higher level of judgment. The LPN also needs a closer working relationship with and greater degree of direction by the health professional.

The determination of the capabilities of the LPN in complex nursing situations should be arrived at through:

1. An evaluation of the nursing needs of the patient.

2. A realistic appraisal of the elements within the situation (e.g. the complexity of scientific principles underlying the functions and techniques to be carried out).

3. The ability of the LPN to perform in the situation based on her/his knowledge, skills and previous nursing experience.

4. The amount and character of the direction needed by and available to the LPN in the performance of the functions and procedures.

LEARNING ACTIVITIES - continued

Education

The LPN should be qualified for nursing practice through:

1. Preparation in a formal education program in practical nursing approved by the appropriate nursing authority in a state.
2. Initial orientation within the employing institution.
3. Inservice and continuing education for all nursing practitioners to maintain competencies and, for those who qualify, to gain additional competencies that will enable them to broaden their scope of nursing practice within the employing agency by the performance of specialized activities.

Legal Status

1. The LPN must be currently licensed to practice practical nursing according to state law.
2. The LPN must perform within the limits of preparation and experience.

Personal Qualifications

The LPN/LVN:

1. recognizes and has a commitment to meet the ethical, moral and legal obligations of the practice of practical nursing.
2. maintains and promotes good health practices.
3. actively promotes and participates in nursing organizations, inservice education programs, workshops, institutes and other educational and community activities.

Functions

The LPN is prepared to function as a member of the health care team by exercising sound nursing judgment based on preparation, knowledge, skills, understanding and past experiences in nursing situations. The LPN participates in the planning, implementation and evaluation of nursing care in all settings where nursing takes place. The following illustrates the types of activities performed:

1. Direct Patient Care (In hospitals, extended care units, nursing homes, private homes and other related health facilities.)
    a. Provides for the emotional and physical comfort and safety of patients through:
        (1) Understanding of human relationships between and among patients, families and other health care personnel.

LEARNING ACTIVITIES - continued

(2) Participating in the development, revision, and implementation of policies and procedures designed to insure comfort and safety of patients and other health care personnel.

(3) Assisting the patient with activities of daily living and encouraging appropriate self-care.

(4) Recognizing and understanding the effects of social and economic problems upon patients.

(5) Protecting patients from behavior that would damage their self-esteem or relationship with families or other patients or persons.

(6) Recognizing and understanding cultural backgrounds and spiritual needs, respecting the religious beliefs of individual patients.

(7) Considering needs of the patient for an attractive, comfortable and safe environment.

b. Observes, records and reports to the appropriate persons:

(1) General and specific physical and mental conditions of patients and signs and symptoms that may be indicative of change.

(2) Stresses in human relationships between patients, families, visitors and health care personnel.

c. Performs more specialized nursing functions for which the LPN is prepared, such as:

(1) Administration of medications and therapeutic treatments prescribed for the patient.

(2) Preparation and care of patients receiving specialized treatments.

(3) Carrying out first aid, emergency and disaster measures.

d. Assists with rehabilitation of patients, according to the patient care plan, through:

(1) Knowing and applying the principles of prevention of deformities (e.g. the normal range of motion exercises, body mechanics and body alignments).

(2) Encouraging patients to help themselves within their own capabilities.

(3) Being aware of and encouraging the fulfillment of the special aptitudes and interests of patients.

(4) Utilizing community resources and facilities for continuing patient care.

LEARNING ACTIVITIES - continued

2. Community Health

   The licensed practical nurse contributes to community health through nursing activities usually performed outside patient care institutions, e.g. visiting nurse associations, well-child and other public health clinics and industrial nursing units.

3. Individual Citizen of the Community

   The licensed practical nurse participates in activities that promote the community attitudes and welfare in health care. As a private citizen, the LPN:

   a. Utilizes community resources to promote a better understanding of the health services among the general public.

   b. Promotes and participates in community health projects and other health-oriented activities.

Continuing Education

Continued education is essential to prepare the LPN for an expanding role and to keep the LPN informed of changes in nursing and medicine. It includes those organized educational experiences that are planned to help licensed practical nurses achieve more productive and satisfying fulfillment of their roles as health workers. Improved patient care is the primary goal of all continuing education for the licensed practical nurse.

With additional preparation, the LPN is qualified to assume greater responsibility in:

1. Patient care management, such as:

   a. Serving as team leader, charge nurse or unit manager

   b. Supervising other nursing and health related personnel.

2. Specialized areas such as intensive care, coronary care, emergency, rehabilitation, operating room, obstetrics, pediatrics, health clinics and geriatrics.

Utilization of the LPN

The licensed practical nurse is prepared to administer patient care under the direction of health professionals. As a member of the nursing team, the LPN participates in the development of the patient care plan. Administrative and supervisory personnel, responsible for total nursing service, assist each LPN to serve at his/her highest potential.

ACTIVITY #2. Practical Nurse Education

Directions: Read the following.

In 1956, Public Law 911, passed by Congress and signed by President Eisenhower, directed the improvement and expansion of PN training.

LEARNING ACTIVITIES - concluded

In 1965, the ANA position paper emphasized the need to "systematically work to facilitate the replacement of programs for practical nursing with programs for beginning technical nursing practice in junior and community colleges."

The importance, however, of quality PN schools has been recognized and worked for by the NLN, NAPNES and the American Vocational Association, as well as hospitals and nursing home associations, and they have voiced their opposition to the ANA.

Today, there are over 1300 state-approved programs. Program content and experience may vary with each school and the facilities available, but due to state and national accrediting agencies, uniformity in the basic program is being achieved.

All programs must meet the approval of State Boards of Nursing so that graduates become eligible for licensure examination.

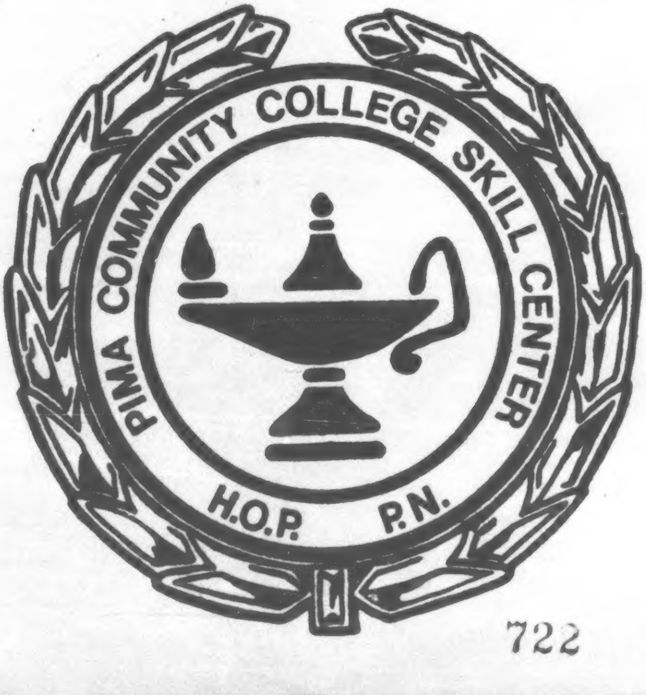
Continuing education is available through courses in leadership, medicine, communications, psych., etc. that are sponsored by NAPNES, NFLPN, junior colleges and vocational technical schools. Courses for college credits may lead to RN. There are many types of programs and continuing education.

A currently licensed practical nurse may use the letters LPN after his or her name. In Texas and California the term Licensed Vocational Nurse is used and the initials LVN are legally acceptable.

SPN or SN are usually acceptable for students of practical nursing.
GPN may be used until the results of Boards are received.

All GPN's must take the state board examination the first time it is offered after graduation.

The GPN wears the school pin proudly.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